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ENVIRONMENT AND REGIONAL PLANNING

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PRICES SUBJECT TO CHANGE

**ENVIRONMENT
AND
REGIONAL
PLANNING**



**A PILOT STUDY OF THE
COMMITTEE ON
THE CHALLENGES OF
MODERN SOCIETY**



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ENVIRONMENT AND REGIONAL PLANNING

18 CASE STUDIES

FOREWORD

At the end of 1969, the Committee on the Challenges of Modern Society decided to undertake environmental studies on sectorial themes (water, air, etc.). At the same time, the French Delegation proposed that such a sectorial approach of the problems should be complemented with a study of the geographical relationship between environmental policies and the territorial framework within which they were put into effect.

This proposal was agreed by the CCMS in April 1970 and three countries: France (pilot), United States and United Kingdom (co-pilots), with the Federal Republic of Germany being associated more recently, undertook to develop it between then and 1972.

1) The geographical approach has the advantage of being complementary to the studies of the other CCMS groups, since it is also intended as a permanent reminder that geographic considerations and the integration of the environment into the social and economic situation constitute an essential part of any policy in that field.

2) It also appears that this approach might restore to the overall qualitative factor its proper importance, which is often forgotten when situations are considered under a specifically sectorial viewpoint.

3) It finally renders it possible to take account of another characteristic feature: environmental policies should never be confined to a defensive struggle against pollution, but should also pay due attention to the promotion of the quality of life. It is not sufficient to palliate the consequences of an inadequate management of natural resources and it remains indispensable to resolutely come to grips with the voluntary creation of an urban and rural mode of life and to give it its proper dimension by a long term prospective of objectives and resources.

The geographical dimension will thus allow for a proper insertion of the environment within the site as a constraint and, at the same time, as an element of creation. It will be used as a framework within which the different actions aimed at avoiding the degradation of the environment will be integrated and given their full meaning, with a view to creating quality for today's conditions of life.

The pilot study on "Environment and Regional Planning" is therefore intended for determining those regional and local institutions, and defining which levels appear most appropriate

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for ensuring that environmental policies adequately conform to the physical and human geographical circumstances. It demonstrates that regional and local institutions maintain and should maintain sufficient decision-making powers for the implementation at their own level of a given global environmental policy.

* * *

With this perspective, the three countries agreed to analyse a number of specific cases which they considered to be particularly good examples for that purpose: these are the 18 case studies in the present document.

These case studies are not monographs as such; they are concrete case analyses not linked together within a single system, but chosen because of their individual interest within the overall pilot study, e.g. the fight against air pollution in certain regions; the study of estuaries in others; that of expanding metropolitan areas elsewhere. They were, however, chosen with a view to helping the group on Environment and Regional Planning to define a number of preliminary orientations.

GENERAL CONSIDERATIONS

The first concern of the members of the Group was to formulate basic ideas for action at a regional level (or at a nation-wide level: town and country planning) and for environmental action. Some of these are outlined in the present document, although it is stressed that, in practical terms, these two concepts should never have been dissociated: there is a close link between regional planning and development on the one hand and the improvement and preservation of the environment on the other.

(a) Environment

2. The concept of "environmental action", which means far more than simply the fight against pollution, covers all the ways in which living space is organized to meet the manifold needs and aspirations of mankind in varying places and situations. It implies that quantitative knowledge of phenomena is not enough. The quality of the environment is just as dependent on the use of effective techniques - in a political context where their importance is appreciated and their application can be promoted - as it is on an attitude inclining us to make projections regarding the relationships - especially in qualitative terms - between diverse phenomena. If the qualitative factors are to regain their full importance, we must abandon all half-measures, whether technical, administrative or legal, and take an overall

approach; a narrow approach frequently eliminates the qualitative factors and also overlooks the repercussions independently-conceived action can have on neighbouring sectors.

3. This need for an overall approach at the concept and planning level does not, of course, mean that certain specific factors peculiar to a given set of environmental measures should be neglected (e.g. for "environments" such as water, air, land...).

4. The "objective" priorities consistent with the physical characteristics of the region must come first. Control of atmospheric pollution, for example, will be given priority in an enclosed region subject to prolonged periods of temperature variation; while in heavily built-up areas, the creation of green belts will be one of the major preoccupations.

5. On the other hand, one must be alive to "subjective" priorities. Pollution levels as they affect nature are not the only consideration; their repercussions on populations, according to the economic and social pattern prevailing in each case, should also be borne in mind. A region faced with the problem of widespread endemic disease or food shortages, would make massive use of chemicals in agriculture, whereas other more privileged regions would be more reluctant to do this. Also, progress in knowledge and techniques will give even the first-mentioned region recourse to methods which are just as effective but less "harmful". This is a case where one of the development targets should be to improve the environment by attempting to solve the problem in all its ramifications. Consequently, the objective and subjective factors at play should not be considered as immutably fixed bases for planning.

6. It also emerges from a study of the environment that town and country planning does not simply entail lining up single-purpose amenities side by side, however logical this approach may seem; programmes - which are all too often "one-track" - should be designed to resolve several different problems at a time.

(b) Regional action

7. The idea of action on a regional (or nation-wide) scale was first conceived by countries or regions which wished to improve their pattern of physical development by taking territorial features into account: to make a more rational approach to farming, mining, railway and road networks, etc., from the geographical point of view. Then, in the 1930s, this concept began to be applied to the control of urban development and to the direction of labour so as to achieve a better balance of employment without either depressed areas or mass movements of population.

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8. Gradually, the idea widened in scope to take in all the various fields of development, including cultural activities, although without losing its original character - that of a well thought-out physical planning system, setting out the various uses to which the ground is put, rather like town planning.

9. In recent years the town and country planning concept, which has broadened its field of study to include long-term and social forecasting, has gradually grown away from the mere marking out of air and ground space.

10. The new preoccupation with ecology is also adding momentum to this process so that town and country planning is becoming the expression of community aspirations in terms of space. In any case, it is becoming increasingly clear that action in the regional framework is essential to foster concern for practical environmental problems. At all levels - whether in connection with a local site, a province, a nation or a continent - a qualitative, global and imaginative approach is best suited to cater for the geographical aspect in environmental, development and planning policies.

11. Geographical, physical and living space serves both as an overall framework and as an integrator which gives purpose to all activity aimed at preventing the deterioration of the environment and at creating a modern standard of living. Creative policy finds its inspiration, and at the same time its limitation, in the site.

12. The fact that the environment necessarily has its roots in the site should be as self-evident as the link which exists between the environment and economic development. Town and country planning and the environment are both continuing processes, the control of which entails an intimate familiarity with the people, the situations and the places involved as they really are, i.e. as part of a complex whole.

13. Clearly, this approach has nothing in common with a "blinkered" conception of limited local action. From the geographical standpoint, the word "regional" should be understood in its widest sense, as denoting the most appropriate level for responsibility or decision-making according to the type of problem concerned. It should not be too rigidly identified with specific "regional" institution.

14. Having thus defined the theme of its study, the Group has to date turned its attention to the following questions: institutions, a more systematic approach to environmental problems and the specific nature of geographical sites.

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THE THREE THEMES OF THE STUDY

THEME No. 1 : REGIONAL AND LOCAL INSTITUTION RESPONSIBLE FOR
THE PLANNING AND IMPLEMENTATION OF ENVIRONMENTAL
POLICIES

The concept of geographical control and the creation of a "planned geography, ential setting up, at national or even international level, "central" institutions that can analyse the situation in, and the development of, the various sub-regions, identify trends or even establish "long-term guidelines", introduce a strict planning system and where necessary, impose some major patterns of general interest, over and above the normal, and indispensable information participation process.

But this "centrality" is not enough.

Within the general framework of national trends and regulations (which are already international in certain respects), the harmonious development of a region's human and natural potential calls for a genuinely flexible attitude to the original features of each problem (the preservation of scenic beauty, the control of water supplies or measures to check sea pollution, or to protect wild flowers, all require a different and imaginative approach according to the area). This raises the question of the rôle to be played by the various institutions, whether they have a general function, such as a local authority, or whether they have a special environmental function (the supervisory authorities for water, air, etc..).

The responsibility exercised by regional institutions is an ideal counterweight to administration from a distance which is often abstract and normative. It is also useful in encouraging the participation of the local population; this is essential for environmental measures, which comprise a wide range of initiatives at the private and political levels. The aim is to strengthen the link between a community and a site so as to achieve a consistently improving standard in living conditions.

THEME No. 2 : MEANS WHEREBY THE ENVIRONMENT CAN BE GIVEN A MORE
IMPORTANT PLACE IN NATIONAL PLANNING DECISIONS

The sharply varying levels at which development takes place, diverse community requirements, the priorities influencing the action to be taken and the basic physical and ecological factors at play in each case all combine to face the policy-maker with a complex range of options; there are as many assessment criteria as there are relationships between the phenomena.

It would be helpful to have a continuing and accurate idea of the relationship between the environment and economic and social development at the national level and to establish a time-link between these phenomena through analytical forecasting.

In an attempt to rationalise the range of options, both town and country and environmental planners may be tempted to use new tools : physical and social indicators, simulation models, system analysis. To what lengths can one go in this respect if the qualitative data is to be kept meaningful ? Should decisions not be made public at the preparatory stage, and the "political policy-maker" intervene at the most appropriate point, rather than when the whole process has been completed ?

These are some of the questions which are dealt with in this paper.

THEME No. 3 : IMPORTANCE OF THE SPECIFIC NATURE OF
GEOGRAPHICAL SITES FOR ENVIRONMENT ACTION

The environment is conditioned by local geographical factors. Relief, climate, and geological characteristics are constraints which rule out stereotyped policies. These are not immutable factors, however. Although they do not keep pace with man's development, their evolution nevertheless bears the stamp of successive communities, each desirous of organizing its living space in its own way, irrespective of the trend towards uniformity in ways of life. Although they are relatively stable, natural and physical factors are closely involved in the development of man's living conditions and influenced by human intervention.

In any case, environmental action, even if this is confined to anti-pollution measures, is thus conditioned by specific individual situations, although this should not be considered as a justification for going against national or international policy trends in order to satisfy special local requirements; it is essential to combine an intimate knowledge of natural phenomena, as they exist in each local context, with the relevant geographical and social projections.

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REGIONAL AND LOCAL INSTITUTIONS RESPONSIBLE FOR FORMULATION
AND IMPLEMENTATION OF ENVIRONMENTAL POLICIES

- 1.1 Institutional Framework for Decision-Making
- 1.2 Regional Control of Air Pollution: The Case of the
 St. Louis Metropolitan Area
- 1.3.a Framework for Regional Water Management and Quality
 Control: The Case of River Basin Authorities
- 1.3.b Framework for Regional Water Management and Quality
 Control: Reduction of River Pollution and Some Cost
 Implications
- 1.4 Regional Planning and Control of the Waters and
 Shoreline
- 1.5 Integration of Environment in the Planning and Design
 of New Towns: The Case of Le Vaudreuil
- 1.6 National Land Use Policy Proposals
- 1.7 Scenic Easements: A Tool for Environmental Protection
- 1.8 New Institutions for Natural Parks: Regional Parks
 in France

TOOLS TO TAKE INTO ACCOUNT THE ENVIRONMENT IN DECISIONS ON
REGIONAL DEVELOPMENT

- 2.1 Towards Comprehensive Models of the Man/Environment
 Relationship and an Integrated Approach to the
 Decision-Planning Process
- 2.2 Environmental and Economic Activity Analysis Model:
 Methods for Study of the Industrial Sector
- 2.3 Designation of New Towns
- 2.4 Feasibility Studies: Humberside and Severnside

IMPORTANCE OF SPECIFIC GEOGRAPHICAL FACTORS ON ENVIRONMENTAL
POLICIES

- 3.1 Impact of Rapid Growth Areas on Adjoining Rural
Regions: Metropolitan Area Aix-Marseille
- 3.2.a Coastal Zones: Elements of a Specific Policy for the
Coastal Environment - Official Documents
- 3.2.b Coastal Zones: Elements of a Specific Policy for the
Coastal Environment - Coastal Zone Planning
- 3.3 Problems of a Depressed Region: The Appalachian
Experience
- 3.4 The Development of Rural Areas of Low Agricultural
Potential and the Impact on the Countryside

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THE INSTITUTIONAL FRAMEWORK FOR DECISION MAKING (United Kingdom)

This paper outlines recent developments in the British planning system, with special reference to regional and local plans and to countryside policy. It emphasises the importance of developing regional-scale planning studies to illustrate the major interactions of policies affecting the environment and to provide a relatively long-term strategic framework within which detailed and local planning proposals can be properly elaborated.

The paper also stresses the importance of consultation and public participation in the plan-making process and highlights, the special need for this when policies are still at a formative stage of development. Within the particular field of countryside policies, attention is drawn to the special roles of advisory bodies at the national level (like the Countryside Commission) and their relationships with local planning authorities who have the executive responsibilities for exercising land use planning controls.

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1.1. INSTITUTIONAL FRAMEWORK FOR DECISION-MAKING

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INTRODUCTION

1. The purpose of this paper is to examine that part of the institutional system which is responsible for decisions on proposals affecting the rural environment, with special reference to the machinery of government at regional and local levels and countryside policy. Although the approach to problems of economic development and the environment remains basically the same throughout the United Kingdom, the system and priorities differ in detail in England, Wales, Scotland and Northern Ireland: in this paper the description relates primarily to the machinery as it exists in England.

2. The present government has pledged itself to a major review of its responsibilities and of the organisation of its administration. One of its first decisions was to create a new Department of the Environment by the integration of the former Ministries of Housing and Local Government, Public Building and Works, and Transport. At the local level it is similarly pledged to administrative reforms and has recently published proposals for their implementation. At the regional level no changes are envisaged in the immediate future in the functions of the Economic Planning Boards and Councils: these were introduced in 1964.

3. This series of operations reflects the emergence of a policy directed towards the delegation of more power to regional and local interests while at the same time restructuring takes place within each of the various levels of government. Important changes of approach are also reflected in the 1968 Town and Country Planning Act which highlights the need for greater flexibility in development plans and improved consultation procedures at the formative stages of plan preparation. The introduction of a new Countryside Act in 1968, also affects the future form of the total planning system. This paper summarises the progress made to date and some of the interactions between the varying levels of organisation participating in the planning process.

THE PLANNING SYSTEMRegional Level

4. In 1964, the machinery of national government in the regions was reinforced by the establishment of Regional Economic Planning Councils supported and serviced by Regional Economic Planning Boards. Members of the Economic Planning Councils, appointed by the Government, are drawn from a wide range of interests - they include industrialists, trade unionists, local

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government officers and academics. The Boards, on the other hand, are composed entirely of civil servants from a variety of Government Departments, their purpose being to co-ordinate as far as possible the policies and objectives of their Departments within the region.

5. The Economic Planning Councils are advisory bodies, with no executive functions. Their main tasks are to study and advise on the needs, on potentialities, and on the development of long-term planning strategies for their regions; and to advise central Government on regional aspects of national policy. Economic Planning Councils are free to raise directly with Ministers any issue of major concern to the development of their regions. Although having no formal responsibility for the formation of national or regional policy, which remains the prerogative of central government, they can influence policy by persuasion and by the publication of their studies, appraisals and strategies.

6. At about the same time that Economic Planning Councils were set up by central government, Standing Conferences of Local Planning Authorities were also being established in most regions as a result of local initiatives. Although the following quotation is taken from a report by the Yorkshire and Humberside Conference, all have defined their aims along broadly similar lines:

"The object shall be to discuss matters of common interest to the constituent authorities with respect to their function as local planning authorities; to facilitate co-operation between the local planning authorities and the Economic Planning Council and Board, and where appropriate to co-ordinate the activities of the local planning authorities in the region."

7. Although having no binding power over the constituent authorities in their regions they have made good progress in technical co-operation, in establishing subjects of common interest, in evolving joint techniques for studies, in pooling experience and knowledge, and in accepting the differences of emphasis shown by various authorities. Most have stressed the importance of the physical environment and some have set up specific study groups to consider regional environment.

8. During the first stage of the formulation of strategies for regional development the Economic Planning Councils - through the Boards - have made surveys of the economic, social and physical conditions of their areas. Following appraisals of their resources, the Councils in consultation with government departments, local authorities and other institutions have defined

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regional objectives. In the second stage the Economic Planning Councils continue to be associated with the elaboration of strategies for the regions, but theirs is not an exclusive role. Both central government and the local planning authorities must also be involved in what is essentially a tripartite process. When approved by central government, the regional strategies will provide a framework both for central government policy decisions which have regional implications and also for planning at the local level.

9. In South East England a Strategic Plan jointly commissioned by the South East Economic Planning Council, the Standing Conference and central government has recently been completed. This exercise is the first of its kind in this country and has produced a regional framework within which it is intended that the structure planning process (see paragraphs 14 and 15) should be developed on a "sub-regional" basis. It provides a comprehensive statement of the major environmental issues and offers an opportunity for the development of component policies within the context of a strategic appraisal and an overall integrated approach. The proposals of the team have been published to allow an opportunity for consultation and discussion with interested parties before the Government announces its decision on the strategy. Regional strategies will be developed in a broadly similar way in other areas, starting with the North West and the Northern Regions.

10. The success of this approach is, however, dependent upon the concurrent reform of local government aimed at creating local authorities responsible for continuous areas that made, as far as practicable, coherent social and economic entities. When putting forward their proposals for changes in this field the Government in February 1971 defined the following linked objectives:

- (a) they will establish a new pattern of areas within which the major services can be efficiently administered and developed in the future;
- (b) by retaining important responsibilities at the more local level, too, they will give powers of decision and action to those who will be immediately affected;
- (c) the total number of authorities is to be reduced, but the new and rationalised system will be founded upon the organisations of the existing authorities and will preserve wherever possible the loyalties attaching to ancient units of local government; the reduced number of authorities will permit the effective transfer of responsibility and power from central to local authorities;

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- (d) they accept the need for operational authorities to be complemented at provincial and parish level.

11. The reform of the structure of local government will play an important part in increasing the effectiveness of the planning process. At the same time a Royal Commission is investigating the constitutional framework of the regions. When the Commission's report is available decisions may then be taken on the constitution of any regional bodies and on the range of functions they in turn might carry out in relation both to central and local government.

Local Level

12. Most of the executive responsibility for land use planning is delegated by central government and it is the local planning authorities who are charged with the preparation of development plans.

13. With certain minor exceptions, land use planning control in Britain covers all land in town and country and all kinds of development including material changes in the use of land and buildings as well as in building and civil engineering operations. The need for control first received statutory recognition in the Housing, Town Planning and etc. Act 1909, which, as public concern mounted, was followed by a formidable array of Acts culminating in the Town and Country Planning Act of 1947. In contrast to this generation of legislation, which depended heavily upon precise zonings and detailed allocations of land in development plans looking fifteen to twenty years ahead, a greater flexibility is now being introduced into the system through the 1968 Town and Country Planning Act.

14. The new type of development plan will deal with a wider range of subject matter than the old plans, and must ensure that proposals are brought to public notice when they are still at the formative stage. It emphasises the relationship between land use planning and transportation planning and requires those preparing the plans to take account of the wider regional economic and social context within which the plan is framed and resources likely to be available for carrying out proposals. It will also reflect the main lines of housing policy for the area and will facilitate the creation of a good environment in both town and country.

15. The Act provides that new development plans shall consist of two elements: a "structure plan", a written statement, illustrated diagrammatically, setting out the local planning authority's broad policy and proposals for change, which will require the approval of the Secretary of State for the Environment; and local plans drawn up in conformity with the approved structure plan, but developing the policies and proposals

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in it as precisely as possible, which will normally be adopted by the local planning authority itself without reference to the Secretary of State. Such local plans can either be district plans intended to serve primarily as a guide for development control; action area plans which set out proposals for the development, redevelopment or improvement of areas identified in the structure plan for comprehensive action in the short term; or subject plans setting out policy and proposals for particular types of development, e.g. village settlement or mineral workings. Objections to structure plans will be considered by the Secretary of State; for local plans, the planning authority itself will normally be responsible for considering objections before approving the plan.

16. Although the responsibility for preparing development plans and for exercising development control rests in the first instance with local planning authorities the powers of the Secretary of State for the Environment are wide in both fields. Not only can he call in local plans for his own consideration and approval but in the case of development control he can require an authority to submit an application for permission to develop to him for decision. These powers of intervention are nevertheless exercised only in situations where major issues of policy arise. The Secretary of State is more closely involved with detailed development control where appeals are made to him by an unsuccessful applicant for permission to develop. About 400,000 applications for planning permission are made every year to planning authorities in England and Wales. Of these approximately 50,000 are refused and appeals are made in about 7,000 cases. In 1970 just over 30 per cent of such appeals were allowed.

17. Formulation of a development plan and of the more significant amendments calls for constant consultation at different levels. During preparations, the authority must consult all its District Councils, appropriate Government Departments, Statutory Undertakings, and relevant local bodies. Planning Authorities must also take account of the interest of the community at large, intangible as these may be, as well as those of the various competitors for land.

18. Public interest in participation in the plan-making process is illustrated by the response to the Skeffington Committee which was appointed in 1968 "to consider and report on the best methods, including publicity, of securing the participation of the public at the formative stage in the making of development plans for the area". Over 400 organisations and individuals responded to its invitation to comment. More than 80 per cent of the replies were from voluntary organisations and in this context the Committee considered a suggestion that special statutory rights of consultation be given to certain of these - in particular, local amenity societies and co-ordinating bodies for social welfare. Their conclusion is relevant, rejecting as it does the case for formal consultations with these groups:

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"The arguments for giving special rights to bodies whose interest is specially concerned with the environment and physical planning are at first sight attractive. Certainly, many have shown themselves to be vigorous, well organised, and possessing considerable expertise, and the increase in numbers throughout the country has been quite remarkable. Much as we admire the work of such groups, we think that it would be wrong to give statutory recognition to any organisation which represents only one of the multiplicity of interests affected by a plan. That does not mean that they will not be informed: they should be, as soon as possible. There is, of course, an obligation upon the authority to provide adequate publicity and consider representations as laid down by the Act, but no one group should be in a privileged condition."

COUNTRYSIDE POLICY

19. Inevitably, in a small, heavily populated and industrialised country, there must be clashes of interest between the policies for, on the one hand, development and, on the other, conservation of the countryside.

20. Public concern with protection and enjoyment of the finest parts of the countryside found statutory expression in the National Parks and Access to the Countryside Act 1949. The Act provided for the establishment of the National Parks Commission, which was specifically charged to promote the establishment of national parks, areas of outstanding natural beauty and long distance routes. This Act also gave additional powers to the Nature Conservancy which was set up earlier that year as the official body responsible for advising on and helping to implement a national policy for wildlife conservation. It is now part of the Natural Environment Research Council.

21. National parks were created in order to protect the natural beauty of the area and to promote their use for informal outdoor recreation. Ten such parks (7 in England and 3 in Wales) have been established by the Government on the Commission's advice. They cover 9 per cent of the surface area of England and Wales. Two are administered by joint planning boards (i.e. for planning purposes these parks are administered quite separately from the counties around). The remaining 8 are administered by committees of the appropriate county planning authority; the planning of those whose boundaries straddle local planning authority boundaries is co-ordinated by a Joint Advisory Committee. In order to ensure that the national interest in the park is given effect, one third of the membership of the boards and committees is appointed by the Secretary of State on the advice of the Commission; exchequer grant is paid by the Secretary of State to the National Park Authorities for conservation and recreation schemes given approval by the Commission.

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22. Areas of outstanding natural beauty are also established by the Secretary of State on the Commission's advice; such areas are administered by the local planning authority, who are authorised to have particular regard to their protection. The Commission also takes the initiative in establishing long distance routes for lengthy journeys on foot or horseback.

23. Criticism of the relatively narrow powers available under the 1949 Act for the protection of the countryside and its recreational use led to the Countryside Act 1968. This replaced the National Parks Commission by the Countryside Commission, which was charged with promoting the opportunities for informal outdoor recreation in the countryside and with conserving and enhancing the beauty of all the countryside. But it remains an advisory body, its executive powers being confined to research and experimental work and the provision of information about the countryside. In particular it has been given a responsibility to promote the establishment of country parks, picnic sites and transit camping and caravan sites. For all of these exchequer grant aid can be made available on the advice of the Commission to local authorities and private bodies and individuals. Country parks - that is areas for relatively intensive recreational use in the countryside within easy access of major urban areas - are being approved or set up at the rate of one a month, picnic sites at a rather higher rate. Exchequer grant for tree planting and eyesore clearance is also available on the Commission's advice, and thus the way is open to implement extensive schemes for landscape improvement.

24. Nature conservation is partly effected by the Nature Conservancy through the safeguarding and management of the most important sites for wildlife, especially in the 130 National Nature Reserves so far established. In addition, a much larger number (c.2600) of areas has been notified as sites of special scientific interest to local planning authorities, who are required to consult the Conservancy before granting planning permission for development on such sites. In 1965, a Nature Conservation Review was launched, aimed at reassessing the national importance and best means of safeguarding all the appropriate sites; this is regarded by the Conservancy as a major contribution to national resource planning.

25. The priorities and emphasis of the Conservancy's work, both in research and practical measures for conservation, must be where human impact on wildlife and habit is most significant. It provides advice on wildlife management not only to government, but also to other bodies, both official and unofficial and to individuals.

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26. The routine operation of development control in the countryside is the task of the local planning authorities using their powers derived from the Town and Country Planning Acts. But a wide variety of statutes not directly related to planning, e.g. legislation affecting water supply, housing, roads, etc. contains special clauses relating to the preservation of rural amenities. Likewise, government departments, statutory undertakers and other public bodies which may be exempt in certain circumstances from a need to acquire planning permission for their developments are nevertheless required by the provisions of the 1968 Countryside Act to pay due regard to the need to conserve the natural beauty of the countryside.

27. The National Trust is not an agency of government, but its activities complement the efforts of central and local government to secure protection of the countryside and its use for public enjoyment. The Trust (which had nearly 240,000 members in May 1971) acquires and manages fine buildings and countryside for public enjoyment. It now owns or manages some 400,000 acres (in England, Wales and Northern Ireland) and by its efforts has saved many fine tracts of the countryside and the coast from development.

28. The Trust and other voluntary organisations represent independent opinion both to central and local government on many projects affecting the environment, and they frequently make representations at planning inquiries. The Committee for Environmental Conservation (Co En Co) which was set up in November 1969 co-ordinates the activities of voluntary organisations in the preservation and conservation fields. It provides a means by which these bodies may speak to the Government on matters of general principle which transcend the terms of reference of any individual organisation. It also attempts to settle points of conflict between different environmental interests and to identify areas of overlap or gaps in coverage. It includes in its membership the National Trust and the Councils for the Preservation of Rural England and Wales.

CONCLUSION

29. Essentially the strength of the total system lies in the strong consensus of both governmental and public attitudes and opinions with regard to the rural environment. These are reflected in the continuity of policies directed towards the concentration of new developments in and around existing built-up areas; the prevention of urban sprawl by the adoption of both formal and informal 'green belts'; and the stringent control of development in all areas of high landscape value whether determined in terms of national or local criteria. Stimuli for virtually all these aspects of policy derive largely from

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initiatives at the local level. Powers allowing the implementation of these policies have their origins in national legislation. Stimulus, advice and a measure of financial control are also functions of central government and the Countryside Commission in these fields.

30. In a country as small as Britain successive Governments have maintained a tradition of delegating maximum powers to local levels. On the whole a regional level of intervention in environmental matters has not been found necessary. Pressures for it may grow as the needs for and interactions between city regional scale planning strategies emerge. The reconstruction of local government areas into fewer and larger units is designed to meet many of these pressures. But until the local government reforms have been introduced and discussions on the role of provincial administrations have been reported upon by the Crowther Commission on the Constitution, any movement towards general purpose intervention in the management of the countryside is unlikely.

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REGIONAL CONTROL OF AIR POLLUTION : THE CASE OF THE ST. LOUIS
METROPOLITAN AREA (UNITED STATES)

The report on the St. Louis area air pollution control programme gives an analysis of a new approach at the regional level. It shows how complex governmental patterns create obstacles to an effective fight against air pollution, and how these obstacles can be overcome by citizens' interest, local and state governments' co-operation, and strong Federal Government leadership. This case study has the drawback of not giving sufficient attention to the total ecosystem of the region; for example, to the interaction between two kinds of pollution, or the need for controls outside air pollution, such as land uses. It illustrated, however, the fact that a single environmental factor such as air pollution requires in itself complex regional action; a total environmental programme would be, in many cases, politically, technologically, and financially premature and detrimental to the effectiveness of single objective such as air quality.

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1.2 REGIONAL CONTROL OF AIR POLLUTION

THE CASE OF THE ST. LOUIS METROPOLITAN AREA

by the Office of Service and Technology
Air Pollution Control Office
US Environmental Protection Agency

Historical Background

Over the past two decades, the United States began to realize that urbanization, population, economic growth, and technological change were having a serious adverse effect on the quality of the air. In 1955 Congress responded to this growing public concern with legislation authorizing a Federal program of research in air pollution and technical assistance to State and local governments. This legislation established the policy, which continues in effect, that State and local governments have the fundamental responsibility for dealing with community air pollution problems. By 1963, it was apparent that progress toward better control was not matching progress toward a better understanding of the problem, because, in general, State and local governments were not equipped to cope effectively with community air pollution problems. Congress passed the Clean Air Act of 1963 which authorized two major new Federal activities: awarding of grants directly to State and local agencies to assist them in developing or improving control programs; and Federal action to abate interstate pollution problems, which are essentially beyond the reach of individual states and cities. The Act also expanded the Federal research and development program and placed emphasis on two of the most important aspects of the national air pollution problem--motor vehicle pollution and sulfur oxides pollution arising from the burning of fossil fuels.

In the four years that followed the enactment of the Clean Air Act, there was an expansion of State and local control programs, and Federal abatement actions were initiated in a number of interstate areas. Expanded research efforts helped to demonstrate the need for, and hastened the development of, new and improved control technology. Under amendments enacted in 1965, national standards for control of motor vehicle pollution were promulgated for initial application in the 1968 model year. In spite of these efforts, however, the problems of air pollution continued to grow and control activities were still weak in comparison to the magnitude of the problem. This fact lead to the adoption of the Air Quality Act of 1967.

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The Act significantly expanded the Federal program on research and development of control technology. It continued the authority of the Department of Health, Education and Welfare to provide grants to assist State and local control agencies. It continued the Department's authority to abate interstate air pollution problems, and, on request from a State, interstate problems, and it provided for Federal measures to abate air pollution when an episode threatens. It continued the authority for setting national standards for control of motor vehicle pollution. The main distinction of the Air Quality Act of 1967 from previous legislation, however, was the placement of emphasis on a regional approach to air pollution control.

The Regional Approach

Air pollution in the urban areas of the United States is a regional problem which frequently extends across governmental boundaries. Therefore, successful control of air pollution requires coordinated planning, standard setting, and enforcement by the several governmental jurisdictions which share a common problem. The Act provides a regional approach which depends upon coordination and cooperation between all levels of government: local, State, and Federal. To set in motion the machinery for regional air pollution control, the Department of Health, Education, and Welfare first designates Air Quality Control Regions, issues air quality criteria, and publishes reports on control techniques. The designation of a Region indicates the States and local jurisdictions that will be involved in a regional air pollution control effort. The air quality criteria indicate the extent to which various concentrations of an air pollutant are harmful to health and damaging to property. The reports on control techniques provide information on the effectiveness and costs of various techniques for controlling air pollutant emissions. After the Department of Health, Education, and Welfare completes these initial steps, State governments develop air quality standards and plans for implementation of those standards within the Air Quality Control Region. An air quality standard defines the desired limit of the concentration of a pollutant in the ambient air of the region. It represents the degree of air quality which the regional control program will attempt to achieve. An implementation plan is a delineation of the steps which will be taken to attain the chosen air quality standards within a reasonable time. The Governors of the States encompassing the Air Quality Control Region have 90 days to indicate that they intend to set standards, an additional 180 days to set the standards, and an additional 180 days to develop plans for implementing them. The procedure for setting standards includes a public hearing which allows residents of a Region

to express their views concerning desired standards. The Department of Health, Education, and Welfare reviews air quality standards and implementation plans in order to ascertain their consistency with the provisions of the Clean Air Act.

When air quality standards and implementation plans are approved, States proceed to control and prevent air pollution in accordance with the plans. This system for establishing a program for control of air pollution on a regional basis is depicted in the flow diagram in Figure 1.

The Size of a Region

The Act specifies that the designation of an Air Quality Control Region be based on jurisdictional boundaries, urban-industrial concentrations, and other factors including population growth trends, regional governmental cooperation, and air pollution diffusion patterns necessary to provide adequate implementation of air quality standards. This language suggests a number of objectives which are important in determining how large an Air Quality Control Region should be. Basically, these objectives can be divided into three categories. First, a Region should be self-contained with respect to air pollution sources and receptors. In other words, a Region should include most of the important sources in the area as well as most of the people and property affected by those sources. In this way, all the major elements of the regional problem will lie within one administrative jurisdiction. Unfortunately, it is impractical if not impossible to delineate regions which are completely self-contained, since air pollutants generated within a region and transported out of it can affect external receptors to some degree.

The second general objective requires that boundaries be designated to meet not only present conditions but also future conditions. In other words, the Region should include areas where industrial and residential expansion are likely to be involved in air pollution problems in the foreseeable future. This objective requires careful consideration of existing metropolitan development plans, expected population growth, and projected industrial expansion. Such considerations should result in the designation of Regions which will contain the sources and receptors of regional air pollution for a number of years to come. Of course, regional boundaries need not be permanently fixed. Boundaries should be reviewed periodically and altered when changing conditions warrant readjustment.

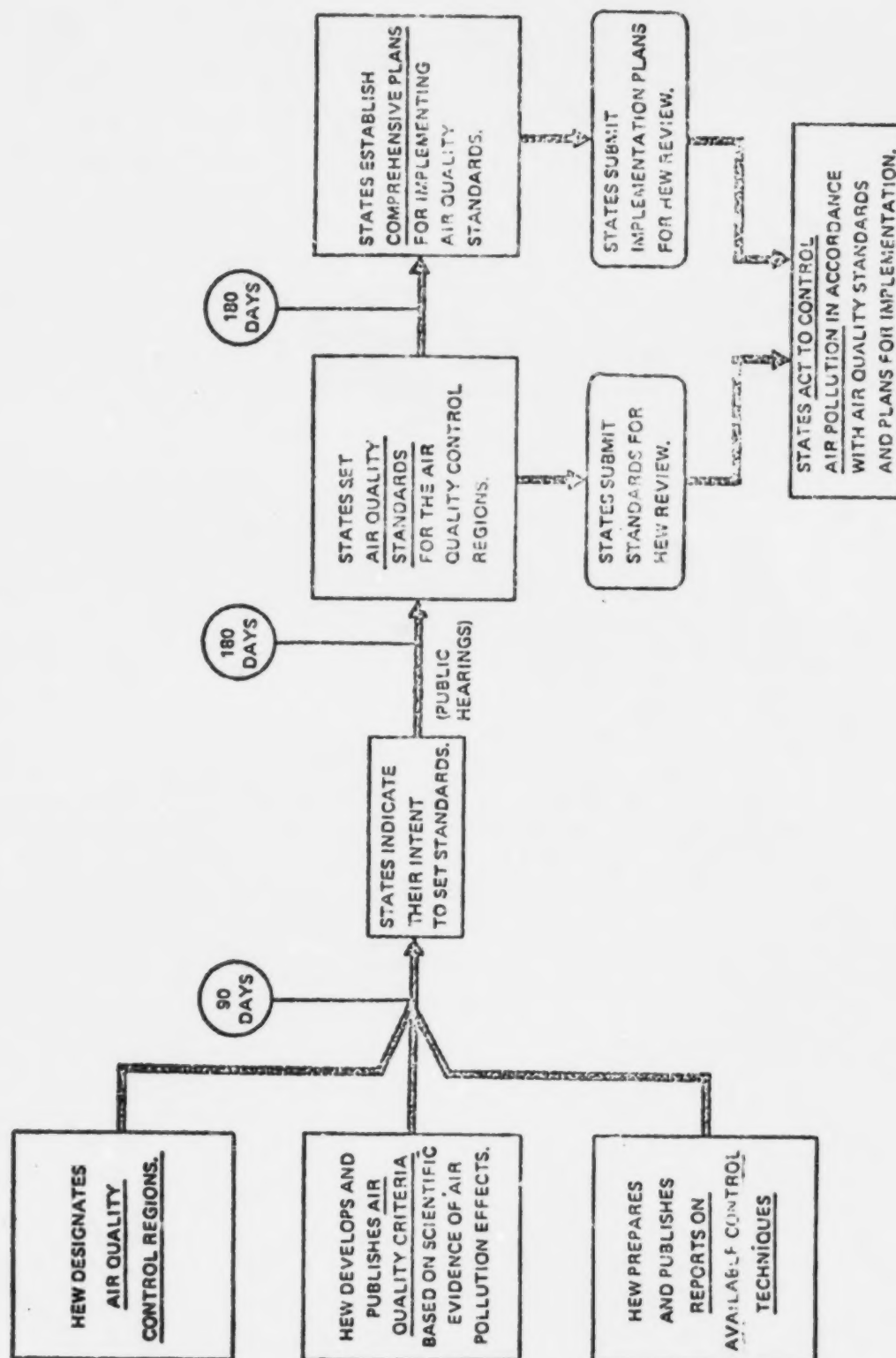


Figure 1 FLOW DIAGRAM FOR ACTION TO CONTROL AIR POLLUTION ON A REGIONAL BASIS, UNDER THE AIR QUALITY ACT.

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The third objective is that regional boundaries should be compatible with and foster unified and cooperative governmental administration of the air resource throughout the Region. Air pollution is a regional problem which often extends across several municipal, county(1), and State boundaries. Clearly, the collaboration of several governmental jurisdictions is prerequisite to the solution of the problem. Therefore, the Region should be delineated in a way that encourages regional cooperation among the various governmental bodies involved. In this regard, the existing pattern of governmental cooperation on the whole range of urban problems may become an important consideration, including the pattern of cooperation among existing air pollution control programs.

In general, administrative considerations within governmental jurisdictions should not be divided. Although it would be impractical to preserve State jurisdictions undivided, usually it is possible to preserve the unity of county governments by including or excluding them in their entirety. Occasionally, even this is impractical due to a county's large size, wide variation in level of development, or striking topographical features.

The St. Louis Interstate Area

The metropolitan St. Louis area presents a good example of a location where regional approach should be taken to combat community air pollution. The City of St. Louis with a 1970 population of approximately 675,000 people lies in eastern Missouri on the west bank of the Mississippi River. The metropolitan area of St. Louis, however, extends to the west into St. Louis and St. Charles Counties and to the east into the state of Illinois (Madison and St. Clair Counties). The 1970 population of the metropolitan area is approximately 2,000,000. Although the population in the City of St. Louis is decreasing, that in the St. Louis Standard Metropolitan Statistical Area (SMSA)(2) is growing rapidly - approximately 27% for the period 1960-1970, and a projected increase of over 40% for the period 1970-1990. Figure 2 portrays the present and projected urbanization patterns in the area.

- (1) In the U.S., the "county" is the largest territorial division for self-government within a State. The average size of a U.S. county is approximately 950 square miles (2,500 km²). Air quality control regions generally consists of several counties. The average size of the first 57 air quality control regions designated in the U.S. was about 3,900 square miles (10,000 km²). The medium size was 2,800 mi.² or 7,300 km².
- (2) SMSA's are defined by the Bureau of the Census and other Federal agencies for use in publishing census data and a variety of other government statistics. The St. Louis SMSA includes St. Louis City, St. Louis, Jefferson, St. Charles, and Franklin Counties in Missouri, and Madison, St. Clair and Monroe Counties in Illinois.

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Topography

The St. Louis area is gently rolling, generally with gradual undulations rather than with sharply defined ridges and valleys. Although there are a few rises and drops of 100 feet in elevation over a short distance, the area within a 25-mile radius of downtown St. Louis is generally free of major orographic features that strongly influence meteorological variables. In general, elevations range from 400 to 600 feet above sea level in the region with the elevation of the Mississippi River about 400 feet above sea level at this point.

General Climatology

The St. Louis area experiences meteorological conditions typical of most Great Plains cities that are not influenced by major natural features such as mountains or large bodies of water. The winters are fairly brisk and stimulating as a rule and are seldom severe. Almost every winter has several periods of mild weather and occasional short spells of extreme cold. Summers are generally warm, and spring and fall are characterized by moderate temperatures. Marked variations in day-to-day conditions are provided by changes from warm, moist air flowing up from the Gulf of Mexico during some periods to cool, dry air from the Northern Plains during others.

The meteorological parameters of most interest in air pollution dispersion analysis are the wind speed and direction and mixing depth. A survey furnished the daily and seasonal data of the mixing depth (depth of the air layer in which pollutants may mix and be dispersed).

Air Pollutant Emissions

The St. Louis metropolitan area is heavily industrialized with a significant number of plants that generate air pollutant emissions from fuel burning and industrial processing. The major industrial sources include petroleum refineries, cement plants, steel mills, steel foundries, grain processing facilities, chemical plants, sulfuric acid plants, and a host of other operations. Additional pollution sources are steam electric power plants, transportation sources (especially motor vehicles), and solid waste disposal. An emissions inventory of the St. Louis area indicated the total quantity and the geographical and seasonal variations of air pollutants emitted. It shows a cluster of major point sources in St. Louis City, Missouri and East St. Louis, Illinois, and another cluster located in the Alton area, in Madison County, Illinois. Emission densities, in tons per day per square kilometer, of sulfur oxides and particulates were mapped for the winter season, with highest densities in the St. Louis-East St. Louis and the Alton areas.

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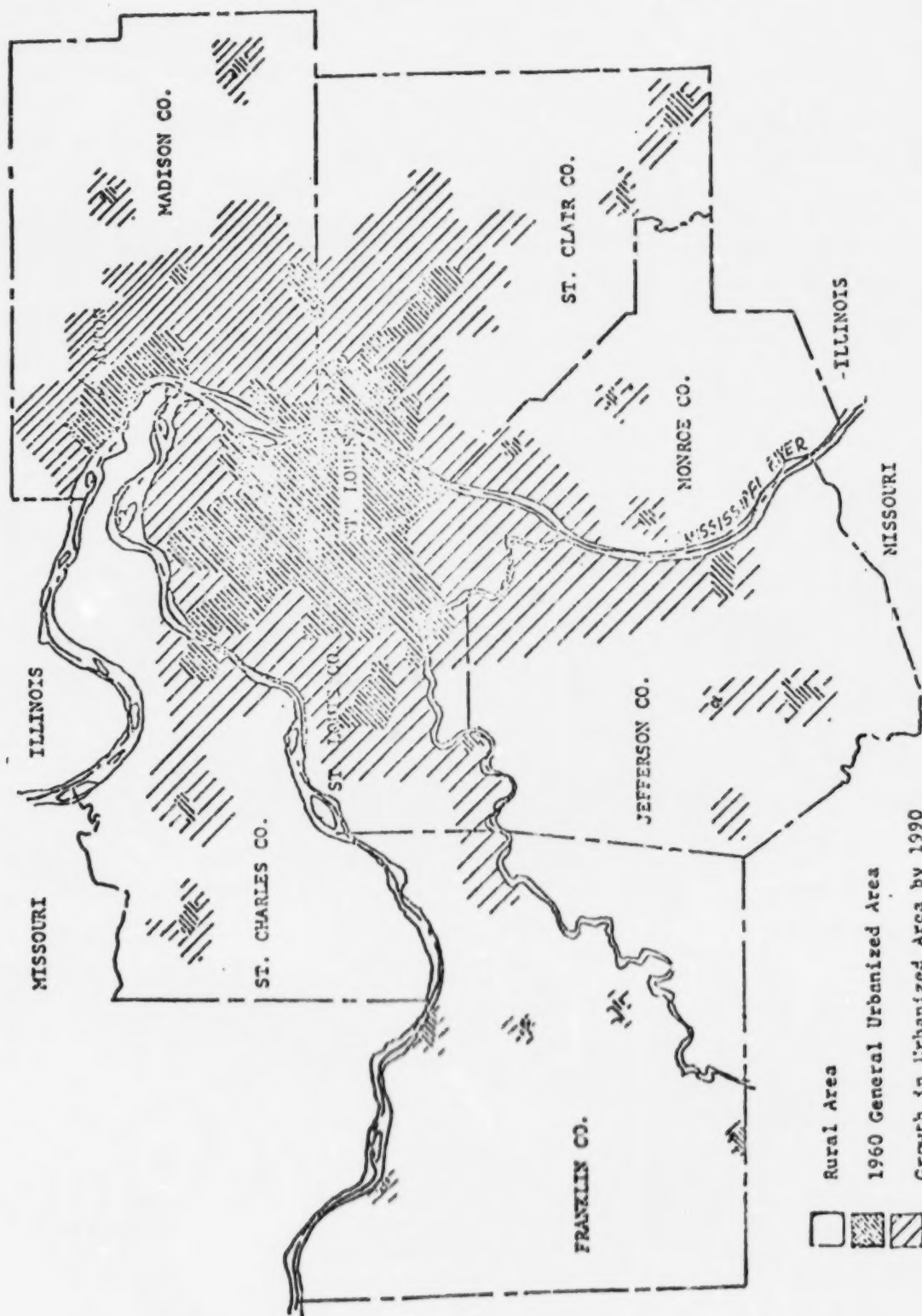


FIGURE 2. PRESENT AND FUTURE ORGANIZATION IN THE

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Air Quality

The geographical distribution of pollutant sources and quantities of emissions, present and projected into the future, illustrates the extent and magnitude of the facilities contributing to the pollution problem. The extent of the influence of pollution on people and property both inside and outside the highly urbanized portion of the metropolitan St. Louis area is indicated by the air quality levels, both measured and predicted. Air quality levels for SO_x and particulates have been measured as part of a sampling network within the core of the metropolitan area. To predict levels outside the core or for projected conditions involves the use of a mathematical diffusion model, a technique based on the location and quantity of emissions and on meteorological conditions. The result is a series of isopleths depicting decreasing concentrations of pollution outward from the high-emission centers. Although the area of high particulate emission densities is small, mapping shows that the area affected by these emissions is quite large. It further illustrates the inter-county and interstate nature of the air pollution problem in the St. Louis metropolitan area. Depending upon meteorological conditions, pollution emanating from sources in Alton, for example, may directly affect the people and property in St. Louis City and visa versa.

History of Pollution Control Action to Date in the St. Louis Metropolitan Area

Control action in the St. Louis area has a long history, particularly with regard to the reduction of black smoke. The first antismoke ordinance was passed in 1893, and a regulation specifying the type and quality of coal to be sold in the city was made in 1937. In 1940 further restrictions that limited the use of high volatile content coal were imposed. In 1962 requests were made by St. Louis, Missouri, and East St. Louis, Illinois, to the Federal Government for assistance in assessing the air pollution problem in the St. Louis area and developing a control program. The result was an "Interstate Air Pollution Study". The first phase of this study assessed the overall air pollution problem in the St. Louis area and recommended activities for detailed analysis. Results of the second phase were reported in eight volumes, as follows:

- I. Introduction
- II. Air Pollutant Emission Inventory
- III. Air Quality Measurements
- IV. Odors - Results of Surveys
- V. Meteorology and Topography
- VI. Effects of Air Pollution
- VII. Opinion Surveys and Air Quality Statistical Relationships
- VIII. Proposal for an Air Resources Management Program.

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At present each of four air pollution control agencies have authority to control air pollution problems in their respective jurisdictions in the Metropolitan St. Louis Area. In the State of Missouri, the Missouri Air Conservation Commission, formed under the Missouri Air Conservation Law, has state-wide jurisdiction for administering air pollution control. The Commission may designate a certificate of exemption to a local agency when the agency adopts regulations at least as stringent as those set by the Commission. The Commission has issued such certificates to St. Louis City and to St. Louis County. In the State of Illinois, control of air pollution is vested in the State's Air Pollution Control Board by virtue of the Illinois Air Pollution Control Act. The Illinois Board also has the authority under the Act to award certificates of exemption to local agencies. To date, no such certificates have been issued to air pollution programs in the Illinois portion of the Metropolitan St. Louis area.

The Metropolitan St. Louis Interstate Air Quality Control Region

In November 1969, as required under the Air Quality Act of 1967, the Secretary of the Department of Health, Education, and Welfare, formally designated an Air Quality Control Region (AQCR) in the St. Louis area. The St. Louis AQCR consists of the City of St. Louis, and St. Charles, St. Louis, Franklin, and Jefferson Counties in Missouri, and Madison, St. Clair, and Monroe Counties in Illinois. Figure 2 shows the boundaries of the Region. The boundaries were chosen on the basis of technical and political factors as described earlier. Most pollution sources are concentrated in the cities of St. Louis, Missouri, East St. Louis, Illinois, and Alton, Illinois, but the dispersion of pollution affects all of the counties in the Region. Present urban growth patterns indicate an expansion outward from the core St. Louis-St. Louis-East St. Louis area; a continuation in the future of such growth is expected. The Region as designated is identical to that of the East-West Gateway Coordinating Council, the official urban planning agency for the St. Louis metropolitan area.

Air Quality Standards

In its provisions for regional action to deal with air pollution, the Air Quality Act reflects the fact that, because of the transboundary movement of pollutants in the air, the extent to which air pollution is or is not controlled in one community can affect air quality in neighbouring communities. The boundaries of Air Quality Control Regions are intended to encompass the areas in which such movement of pollutants has a significant effect on air quality. Within

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each region, then, air quality standards applicable to all portions of the Region should be mutually compatible. This requirement is especially pertinent to Regions involving two or more states (e.g., the St. Louis Region); no State should set air quality standards which, even if fully implemented, would impair air quality in any portion of another State below the standards set by that other State. Thus, if two States set standards that are not identical, the standards are compatible only if the implementation plan developed by the State insures that the States pollution load does not adversely affect the air quality of the adjacent State.

In Air Quality Control Regions that include parts of two or more States, the establishment and implementation of air quality standards obviously requires a high degree of cooperation among the States involved. State governments are expected to achieve such cooperation either by entering into interstate compacts, utilizing established regional agencies that have been involved with air pollution problems, or creating new regional planning agencies.

At the time the boundaries of the St. Louis Region were set, the Department of Health, Education, and Welfare had already issued criteria and control techniques documents for sulfur oxides and particulates. Thus, the timetable for the development of programs to control these pollutants under the Air Quality Act of 1967 began on the date of designation of the Region. For pollutants for which criteria and control techniques documents are issued after a region is designated (e.g., carbon monoxide, hydrocarbons, and oxidants issued in March 1970), the timetable begins on the date of issuance of the documents.

As required by the Act, the Governors of Missouri and Illinois informed the Secretary of their intent to comply with the Act. Public hearings on air quality standards proposed for SO_x and particulates were held by each state. The following ambient air quality standards, reflecting results of the public hearing, were submitted to the Secretary of HEW and were approved in June 1970.

Sulfur Oxides and Particulates Air Quality Standards
(Expressed in cg/m³)

	State	Attainment Date	Annual Geometric Mean	Annual Arith. Mean	24-hr. Max.	1-hr. 1% Max.
SO _x	Mo.	1/ 1972	-	57	-	1030
	III.	1972	43	-	486	1201
Particulates	Mo.	1/ 1972	75	-	200	-
	III.	1972	75	-	260	200

1/ Attainment date for Missouri portion of the Region will be included in the implementation plan.

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Implementation Plans

To date, the States of Missouri and Illinois have not yet submitted to the Secretary their plans for implementing the standard in their portions of the Region. To assist the States in the Development of such plans, particularly as they pertain to the required approval by the Secretary, the Federal Government has issued guidelines. The following discussion summarizes the salient elements envisioned for plan development.

Development of the Control Strategy

The heart of an implementation plan is the emission control strategy designed to meet the established air quality standards. Such a plan sets forth requirements and a timetable for the prevention, abatement, and control of a given air pollutant. Legally enforceable emission standards applicable to sources of that pollutant ordinarily will be a principal element of the emission control strategy. Other elements include regulations pertaining to fuel use, rules for the location of new industrial plants and other sources of the pollutant, restrictions on open burning, plans for disposal of solid waste materials, and so on.

The final implementation plan selected for a specific air pollutant is the product of a comprehensive assessment of the nature and extent of the pollution in the region involved - including a review of existing levels of that type of pollution, the types of sources and their emissions, the techniques available for their control, and the probable increase in source emissions due to urban and economic growth. Based on this assessment, various emission control strategies are formulated. These strategies are then tested, preferably with the aid of a systematic, quantitative procedure, to determine the optimum one capable of bringing about attainment of the air quality standards with minimum impact on the community.

One quantitative procedure for assessing the impact of alternative control strategies is simulation modeling. Such a model embodies a set of relationships which simulate environmental factors, such as air flow and mixing, and their effect on distribution and transport of pollutants emitted into the atmosphere. Such models are useful in calculating the concentrations resulting from various sources and categories of sources of a given pollutant, based on information on the locations and characteristics of sources in the area and local meteorological conditions. The most widely used example of a simulation model is the atmospheric diffusion model.

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Since any number of control strategies are capable of meeting the air quality standard, the most reasonable and most desirable one is chosen from a careful review of the workability, enforceability, and economic impact of each.

Several types of information are needed to formulate various emission control strategies. It is desirable to have as complete a picture as possible of existing levels of a given type of pollutant in the region. This can best be derived from air monitoring data augmented by simulation modeling; it may not be possible to rely solely on air monitoring because of the difficulty of setting up and operating a sufficient number of sampling stations to provide detailed coverage of an entire region. Most modeling approaches require information on the emission rates of sources and their heights and locations. Sources that are similar in nature but too numerous to treat individually, such as residential heating systems, frequently are grouped together for emission inventory purposes. Similarly, certain approximations may be necessary to take into account daily, weekly, or seasonal fluxuation in emission rates exhibited by some sources.

Another critical element to be considered is the anticipated growth in pollution levels due to increasing urbanization and industrialization. To estimate these changes, it is necessary to obtain information on trends in population, transportation, manufacturing, employment, energy requirements, solid waste disposal needs, and other factors.

Formulating Control Strategies

A control strategy specifies the various degrees of control that will be required of the various sources and categories of sources of a pollutant in an air quality control region to achieve the air quality standard and/or interim air quality objectives for that pollutant within the time periods fixed for their attainment. Since a number of control strategies are capable of meeting the air quality standard, and since each will have different overall costs, it is desirable to evaluate a number of different strategies so that the most reasonable and desirable one may be selected. In the formulation of control strategies, no reasonable control measures should be excluded from consideration. In addition to the use of control equipment on sources, for example, some pollutant emissions may be reduced by switching to different fuels or by alterations in manufacturing processes. Source relocation and increases in stack height may appear potentially capable of reducing

ground-level concentrations in some instances, but it should be kept in mind that such methods often have other ramifications which should be carefully evaluated. An increase in stack height, for example, may serve only to shift the impact of air pollution from one part of a region to another.

Choice of the Control Strategy

Simulation modeling provides a useful means of evaluating the impact on air quality of various control measures. This process is illustrated in Figure 3. Each control strategy starts with a given spatial distribution of sources and source emissions. These data are entered into the simulation model so that contours of air quality can be calculated. Strategies which do not meet the standard are altered so as to do so, and, if this is not possible, they are discarded. For those strategies which pass the test, a further evaluation is conducted on the basis of workability, technical and administrative feasibility, economic impact, etc., and the optimum strategy is selected. The emission reduction strategy that is selected forms the basis of the implementation plan. Figure 4 is an example of predicted SO₂ levels based on one strategy embodying the following: a ban on open burning and hand-fired coal unit operation; use of 0.5% sulfur fuels throughout the region; and a limit on emissions from industrial process point sources to 2,000 ppm on all existing units and to 500 ppm on all new sources. In making such selections, careful consideration should be given to the economic impact and equitability of control requirements imposed on sources. Similarly, the workability and enforceability of control measures should be carefully reviewed in the planning phase. Some control options may pose other drawbacks. Certain control measures may create solid waste disposal problems or other adverse conditions. On the other hand, some measures designed to control emissions of one pollutant may have the advantage of controlling another pollutant as well.

The evaluation of alternative control strategies also should include a determination whether any of them would result in attainment of an air quality standard in one part of the region at the expense of increased pollutant levels in another part of the same region. In the event that there is no reasonable control strategy that would prevent this from happening, the implementation plan should include steps expressly intended to minimize the anticipated increase.

Finally, since all procedures for estimating the impact of emissions on air quality are subject to some error, plans should include a margin of safety in establishing emission limitations or other requirements for the prevention and control of pollutant emissions.

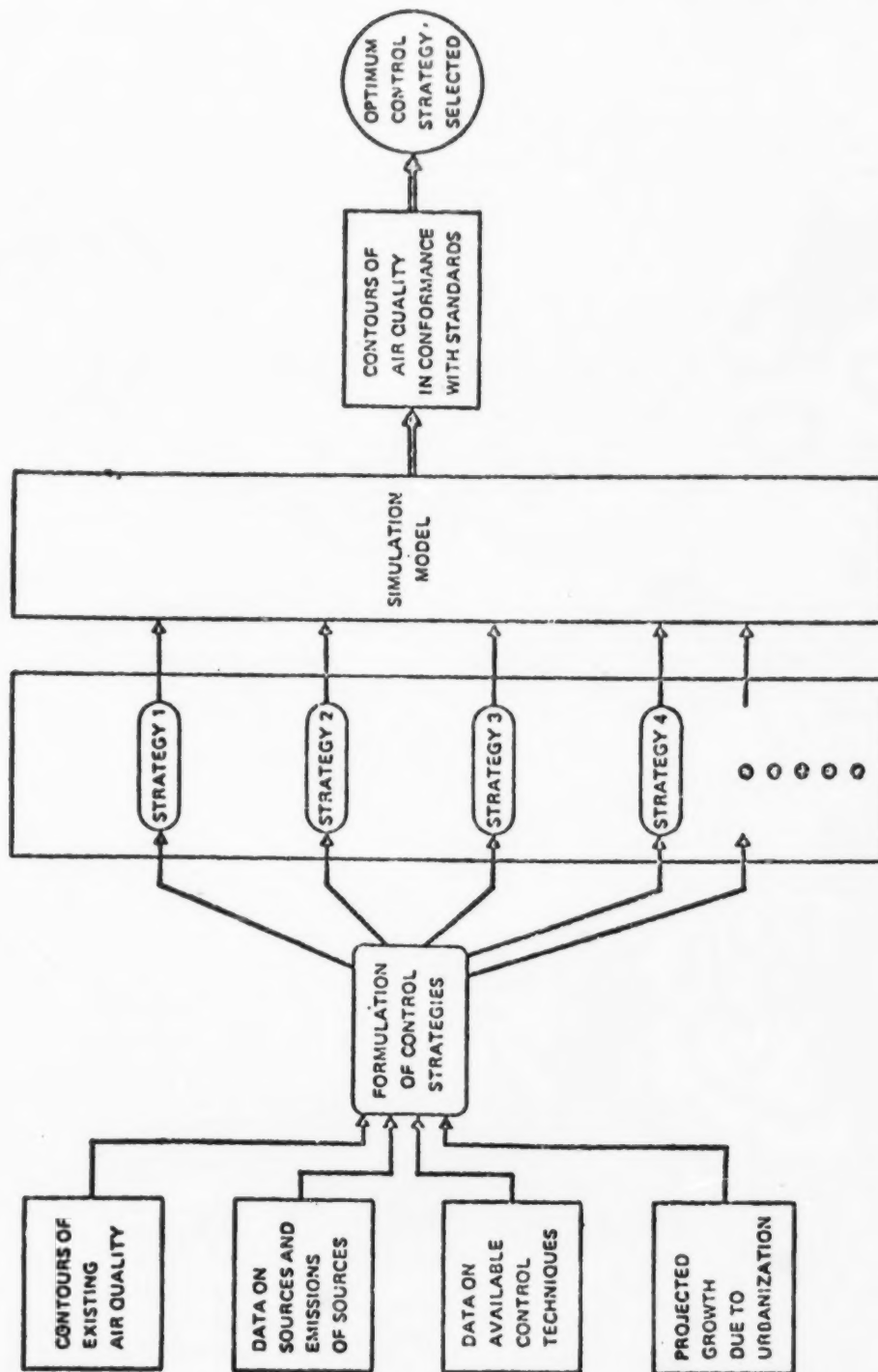
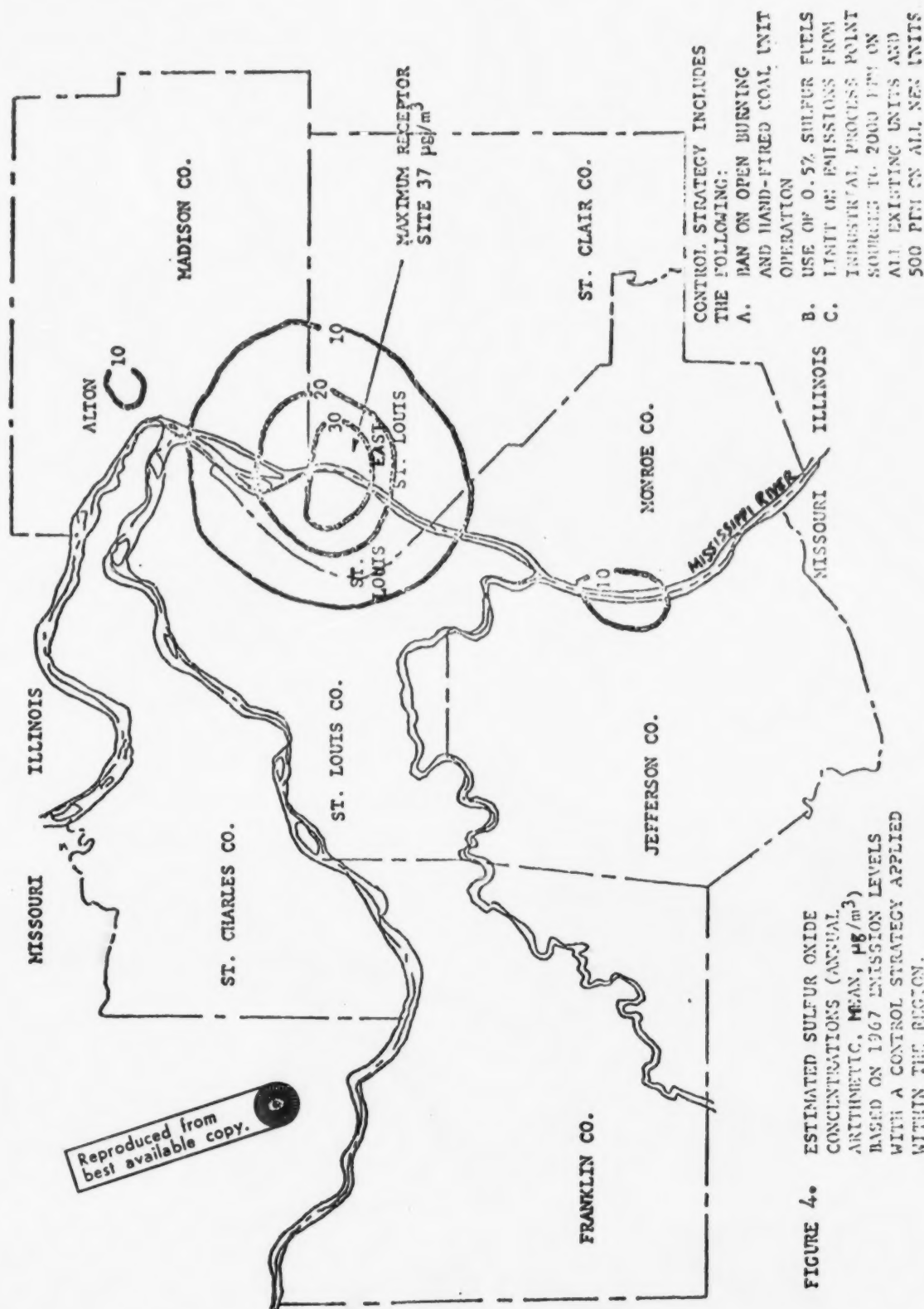


FIGURE 3. FLOW DIAGRAM FOR THE DEVELOPMENT OF IMPLEMENTATION PLANS.



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Other Elements of the Implementation Plan

Besides evaluating and choosing alternatives to emission control strategies for each pollutant, the plan includes other important elements. A timetable for achieving compliance is included which is designed to make effective progress toward the air quality standards in as prompt and orderly a fashion as possible. This can best be accomplished by placing emphasis on the earliest possible application of existing control techniques and new ones as they become available. The plan should include provisions for emergency action procedures, designed to take steps to prevent the occurrence of episodes in which concentrations of the pollutant may exceed the applicable short-term air quality standard, particularly where the standard is based exclusively or primarily on health considerations. The implementation plan must include provisions for surveillance of air quality and source emissions. Surveillance of source emissions provides assurance that measures designed to bring about attainment of an air quality standard, are being taken. Surveillance of air quality is the means by which the impact of these measures is gauged.

Every implementation plan must include provision for enforcement by State action, even though the State elects to assign some or all of the work to local and regional agencies. Adequate legal authority generally consists of power to adopt and enforce standards and regulations pertaining to air pollution sources and emissions; enter and inspect facilities that are contributing to, or may contribute to, air pollution; gather and evaluate data on ambient air quality and pollutant emissions; hold public hearings on matters such as rule-making and enforcement; issue orders to enjoin violations of standards and regulations; impose penalties; grant variances; require reporting of information on air pollution sources and emissions and on activities that contribute to, or may contribute to, air pollution; conduct necessary studies and investigations; require that plans for new facilities that may contribute to air pollution be submitted for review prior to their construction; develop and distribute information to the public; and take action to deal with air pollution episodes.

Nationwide Program

The regional approach to air pollution control as set forth in the Act is in an early stage of implementation in the U.S. The Federal Government is still in the process of designating Air Quality Control Regions and promulgating criteria and control technology documents for various air

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pollutants. The States that encompass Regions designated by the Federal Government are now setting air quality standards and developing implementations plans. By June 1971, over 200 Regions will have been designated and 52 of these will have set standards for sulfur oxides, particulates, carbon monoxide, hydrocarbons, and oxidants.

The case study on St. Louis presented in this paper is an example of the method being employed by the Federal Government for all Regions in carrying out the provisions of the Air Quality Act of 1967. Though the implementation plans are still being developed for the Missouri and Illinois portions of the Region, the plans are expected to contain the provisions mentioned in this paper.

The underlying philosophy of the Federal Government's pollution control efforts is that the responsibility of abating regional air pollution problems rests with State and local governments. For these governments to achieve clean air in the urban-industrial areas of the U.S. requires a high degree of cooperation from industry and the active participation by a well-informed public.

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REGIONAL MANAGEMENT OF WATER RESOURCES AND POLLUTION CONTROL :
RIVER BASIN AUTHORITIES : FRANCE

The River Basin Authorities recently established in France are an interesting example of specialised institutions with a national function stemming from the implementation of an environment policy.

They are ideally suited to deal with problems connected with the management of water resources and the allied problem of preventing water pollution by domestic sewage and industrial waste.

The establishment of these authorities underlines the need for a regional and geographic approach to many of the problems arising from the desire to improve the environment form. The geographical aspect is so restrictive that it was necessary to devise a new breakdown distinct from that of the "regions" which, for the past few years, have provided the framework for all decentralisation measures. The drainage basins provide the basis for the new pattern, which divides France into six separate parts.

The setting up of the corresponding river authorities gave rise to problems as regards financing, equipment, research and technology, and the appointment of qualified staff.

The experience of the River Basin Authorities provides an insight into some general problems likely to confront any specialised body; it is particularly interesting with regard to the links which must be established between these authorities and regional and local bodies with general functions.

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1.3.a FRAMEWORK FOR REGIONAL WATER MANAGEMENT AND QUALITY CONTROL : THE CASE OF RIVER BASIN AUTHORITIES

par J. Picard, Ingénieur en Chef du CRDF
Ministère de la Protection de la Nature et de l'Environnement
Secrétariat Permanent pour l'Etude des Problèmes de l'Eau.

I. THE EXPANDING ROLE OF THE RIVER BASIN FINANCIAL AUTHORITIES

Prior to the promulgation of the Water Resources Act of 16th December, 1964, water management in France was governed entirely by rules and regulations. The numerous administrative bodies concerned were, and still are, responsible for applying rules and controls within the administrative unit suited to their rôle, that of the Département.

However, it gradually became clear that the problem of water management had to be dealt with as a whole and from an economic standpoint, since a system based on regulations was too fragmentary and insufficiently constructive, although rules and controls obviously remained essential.

This overall approach meant that water management and pollution control would no longer be dealt with as separate problems.

The Département was no longer a suitable framework and so it became necessary to define a new geographical framework for tackling the problem in its economic aspect.

The drainage basin seemed to provide the ideal framework for taking into account the common and sometimes contradictory interests of all the water users within each basin.

For this purpose, six large units, coextensive with the drainage basins, and designed to provide a framework for concerted action by users and co-ordination between the administrations in the interests of a coherent water management policy, have been superimposed on the administrative pattern of the Départements through which each administration carries out its appointed tasks.

The Water Basin financial authorities, whose rôle is described below, give effect to one aspect of this policy.

The implementation of the measures designed to ensure rational use of water under the terms of the Water Resources Act of 16th December, 1964, is primarily the responsibility of the Comités de Bassin (Catchment Boards), which have equal State, local authority and private user representation, and of the River Basin financial authorities.

The latter are public bodies of an administrative kind. They are financially independent and play an executive rôle at drainage basin level. They are administered by a board of directors comprising eight state representatives, four local authority representatives and four representatives of the users.

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Their purpose is to carry out or contribute to water management studies connected with the development of river basins and pollution control, and to assist in the execution of common user facilities. To finance their activities they levy charges in a programme spread over several years, on users whose activities make intervention necessary or useful. These charges are levied on users who:

- abstract water from rivers and other sources;
- discharge polluting agents;
- or, cause changes in the rate of flow.

Users can also be charged for the benefit they derive from the work of the River Basin financial authorities.

Decisions by the boards of directors regarding the rates to be charged and the basis on which they are assessed must be endorsed by the Catchment Boards.

The preparation of the programmes reflects the options and aims of economic and social development plans, in the execution of which the River Basin authorities play a part.

II. B A S I C F E A T U R E S O F T H E N E W P R O G R A M M E S

The process of drawing up the sixth Five-Year Plan has made it possible to identify the type and scale of the water management and pollution control works to be carried out during the period of the Plan, and to frame the water management policy which will enable the goals to be attained as effectively as possible.

The latest programmes of the River Authorities have therefore been established in the light of the forecasts and options of the Five-Year Plan so as to fit in with the general pattern of economic development.

Each Authority provides only part of the capital costs. The rest comes from the State and public finance bodies for common user works, and from the users themselves for private facilities. For this reason, the river basin bodies took part in the different phases of the planning process by keeping in constant touch with the regional authorities on requirements and aims.

Moreover, the water management policy embodied in the Plan increases the rôle of the River Authorities, and the infrastructure forecasts are based on a contribution from them at least equal to the level reached at the close of the previous programme.

The Plan also points to the importance of getting the most out of investments through the rational siting of infrastructure projects and the efficient operation of facilities, particularly treatment plants.

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To qualify for assistance from a River Basin financial authority, projects must be designed to have a beneficial effect on the quantitative or qualitative use of water resources or on the regularisation of water courses. They must have a common user interest and bring direct or indirect benefit to a group of users whose interests cannot always be served by the responsible project manager alone, whether the latter is acting individually or collectively (local authorities, associations, ad hoc public bodies).

Generally speaking, the Authority provides part of the cost of common user facilities and the rest is borne directly by the project manager. However, when the project is designed exclusively for the benefit of all the river basin users the Authority may accept full financial responsibility.

The level of investments to be committed under the Sixth Plan is shown in Table I. These investments concern only works having a quantitative and qualitative effect on water resources to the exclusion of actual public or private user facilities such as drinking water supplies, sewage systems and the like.

Among the estimates of State aid for the funding of local governments projects, the Sixth Plan contains a statement of priority regarding contract authority (State subsidy commitments) in an amount of 700 million francs for local authority treatment plants. This figure is more than twice the actual commitments under the Fifth Plan.

Thus, on the basis of national data and the regional studies used in the planning process, the River Basin financial authorities have been able to estimate the effort required in each drainage basin and to determine the content of the programmes they have prepared as their contribution to the implementation of the Sixth Plan.

III. DETAILS OF THE NEW PROGRAMMES

The new programmes for five of the River Authorities were submitted before the end of 1971 and for the Rhone-Mediterranée-Corse Authority in May 1972(1).

The programmes of all the River Authorities include projects for:

- developing water resources;
- improving the quality of the water.

(1) It is worth mentioning that the Seine-Normandie Authority has included the year 1971 in the overall budget for its programme.

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They are generally five-year programmes, spread over the period 1972 to 1976. For the Rhone-Méditerranée-Corse Authority, the programme runs from 1973 to 1977, except for the Provence area where the commitments are spread over 10 years (1972-1981).

A. THE DEVELOPMENT OF WATER RESOURCES

The work of the River Authorities in the field of resource development covers:

- studies designed to improve the technical knowledge of water resources with a view to determining the optimum conditions for their control and allocation among users;
- barrages for regulating resources in accordance with schedules;
- large-scale evacuations of water from areas with a surplus to those with a shortage.

The special nature of the problems arising in each drainage basin has led to a wide range of operations varying from one basin to another and from one part of the same basin to another.

B. IMPROVEMENT IN WATER QUALITY

The programmes for the qualitative improvement of water are geared to the forecasts of the Sixth Plan, the aim of which is to double the rate of building of pollution control installations while at the same time ensuring the proper operation of public and private treatment plants.

These programmes generally entail:

- increased action on the part of the River Authorities, whose higher average contributions speed up the rate at which the installations are built;
- a geographical adjustment of efforts, based on priority areas and areas requiring reinforced action;
- the provision of assistance for the efficient operation of treatment plants.

The level of assistance varies fairly widely depending on the basins and the different operational areas marked out in each basin:

- 15 to 40% for public service installations;
- and, 30 to 70% for industrial effluent treatment plants.

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It has become the general practice to provide all or part of the financial assistance in the form of loans. Moreover, when a subsidy is granted, the concerns responsible for the work can increase the funds available to them by asking for the subsidy to be converted into an interest-free advance (increase coefficient between 1.2 and 1.4) or a loan (increase coefficient between 1.4 and 1.5).

Operating assistance is a new form of aid available over a limited period only. It may take two forms:

- either a 50% contribution towards expenditure on technical assistance services and the training of operating staff which are organized in the most appropriate geographical and administrative context;
- or the possibility of a contribution towards operating expenditure designed to serve as a financial incentive in the search for the most effective way of running the installations, especially when the furtherance of this aim would involve a heavy outlay for the project manager.

The conditions under which assistance is granted will be worked out gradually as the system is implemented by each River Authority. The level of assistance provided may be proportional to the actual cost of effluent treatment. The higher the level of efficiency obtained, the higher will be the contribution. Thus, for a biological treatment plant with full primary and secondary installations, it is planned to provide maximum assistance when the level of efficiency is over 85% and no assistance at all when this level is below 70%.

IV. THE SYSTEM OF CHARGES

These programmes, as well as the technical and operating expenses of the River Basin financial authorities, are paid for out of the charges levied by the latter in respect of:

- the quantity of water abstracted;
- and, the quantity of pollutants discharged.

The breakdown between the two types of charges does not represent a separate balancing of accounts for the resource development and quality improvement programmes, but reflects the extent to which the different users call upon or benefit in one way or another from the activities of the River Authorities. It does, of course, take into account the relationship between quantitative and qualitative water problems. Thus, an excessively high level of pollution may make it necessary to carry out water evacuation projects or construct barrages, while pollution control measures will benefit users who abstract water downstream.

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The Board of Directors of the River Authorities, on which fee-paying users are represented, are responsible for determining the assessment basis and rates for the fees in the light of what the programme entails and the specific problems to be tackled in each river basin.

The systems of charges used by the River Authorities take into account the above considerations and seek to ensure a fair sharing of the charges among users while retaining their value as economic incentives essential for the rational management of water resources.

A. CHARGES FOR WATER ABSTRACTION

The charges payable in respect of water abstracted are related to the quantitative aspects of water management which the River Authorities have to tackle on the basis of current problems and in the light of existing structures. These structures are the most dynamic and long-established in the Mediterranean area, where efforts to remedy the shortage of water in summer have been going on for centuries.

Generally speaking, the charges in respect of surface water apply only during low water periods which are determined on the basis of the water system of each drainage basin. However, for water actually consumed (this is known as "net consumption" or "water abstracted and not replaced") the charges levied are normally higher than when abstracted water is replaced, since the volume of water thus consumed has to be made good by means of retainer barrages, evacuation works and conduits. The same applies to water abstracted from underground, which represents a net loss, and abstractions made in critical areas. (For Paris, which is classified as a critical area, water is abstracted upstream and discharged downstream; similarly, water discharged into the sea is not recoverable as fresh water).

In most cases, fees in respect of water abstracted from a deep underground source are charged all the year round, in order to take account of the annual or interannual rate of renewal of the amounts taken from these natural reserves.

B. CHARGES LEVIED IN RESPECT OF POLLUTION

In line with the aims of the Sixth Plan, the programmes of the River Authorities provide for a big increase in pollution control measures. This entails a corresponding increase in the charges payable for the discharge of pollutants. This increase is obtained through the participation of all concerned and makes for a fairer sharing of costs among the polluters.

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However, to ensure that the charges continue to act as incentives, and in order to speed up work in the priority areas which the River Basin Commission has recommended should be determined, the River Authorities adjust their charges on a geographical basis. The rates are therefore higher in areas where the River Authorities have to intervene most. However, while the rates payable are higher, users in the priority areas will receive more financial assistance from the River Authorities for the works which they have to provide because of their geographical location.

The new programmes relate to the aims of the Sixth Plan and are consistent with the statutory mandate given to the River Authorities.

In seeking to improve the quality of water, they reflect national determination to tackle the problem of water pollution on the fairest possible cost-sharing basis. They also aim at a more rational allocation of investments designed to improve water quality management in the interests of all users.

The increased charges, which reflect the greater effort required by all polluters, do not represent an overall additional charge on the users but enable the cost of pollution control measures to be shared among those responsible for pollution. Thus, while the polluters are made to pay, users who construct treatment plants are given financial assistance.

The charges levied by the River Authorities have no direct effect on general price levels, since their aim is a fair sharing of the cost of implementing the efforts required. These efforts are not determined by the River Authorities but are laid down in the Plan, which is drawn up in co-operation with elected representatives and users and approved by the Government and Parliament.

The following figures give a rough idea of the scale of these charges. In the perspective of 1975, when the rates will be highest, the average level of charges will amount to:

- for Local Authorities: less than 5% of the budget devoted to water supplies and purification;
- for industry: less than 0.5% of the added value;
- for the country as a whole: about 0.04% of the gross domestic product.

In the last analysis, expenditure on pollution control, whether by individuals, local authorities or industry, does have a bearing on the income of the population as a whole. In the perspective of 1975, the total charges to be levied by the River Authorities on Local Government and industry amount to less than 8 francs a year per inhabitant, for an annual available per capita income of around 13,000 francs (1969 francs).

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TABLE I - FORECAST CAPITAL EXPENDITURE UNDER THE SIXTH PLAN FOR THE DEVELOPMENT OF WATER RESOURCES AND POLLUTION CONTROL
(Countrywide in millions of 1970 francs)

Description	Government Commitments (contract authority)	Total Cost of Projects
<u>PROGRAMMED OPERATIONS:</u>		
Treatment plants in built-up areas	700	2,300
Main sewers for waste water	40 to 50	400 to 500
Dams	205	400
Local barrages	50 to 70	160 to 230
Major water evacuation schemes	(1)	250 to 280
TOTAL	<u>995 to 1,025</u>	<u>3,510 to 3,710</u>
<u>OPERATIONS NOT INCLUDED IN PROGRAMMES:</u>		
Private industrial effluent treatment plants		750 to 1,000
(1) The amount of State aid for major water evacuation schemes has not yet been estimated. The corresponding funds are included under the heads relating to facilities for local drinking water supplies.		

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REDUCTION OF RIVER POLLUTION : THE PROBLEM, AND SOME COST
INDICATIONS (UNITED KINGDOM)

A survey was undertaken in 1970 by the Department of the Environment in conjunction with the river authorities of England and Wales to determine existing degrees of pollution in tidal and non-idal rivers and canals. The findings provide an indication of orders of expenditure on sewage disposal needed to achieve standards envisaged for 1980 by the river authorities and how that expenditure might affect the quality of our rivers.

With the reorganization of the administration of water services as from 1st April, 1974, nine regional water authorities in England and one in Wales will become responsible for all services including sewerage and sewage disposal. They will meet their total expenditure from direct charges on the users.

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1.3.b REDUCTION OF RIVER POLLUTION AND SOME
COST IMPLICATIONS

United Kingdom department of the Environnement
by Mr. Richardson, South East (Professional) Directorate

INTRODUCTION

1. Britain was one of the first countries to become industrialised; it was consequently one of the first to experience pollution on a large scale and one of the first to take steps to control it, although generally effective provisions for improving the quality of the rivers did not come until the 1950s and 1960s. These measures are producing results. Our rivers are less polluted than they were fourteen years ago. But much more remains to be done and the Government are determined that further improvements should be carried out as rapidly as possible.

2. This paper deals with one aspect of the current drive to achieve in the realm of clean water what is already being achieved in the field of clean air. It presents some results from recent surveys of river pollution undertaken by the Department of the Environment in collaboration with the river authorities of England and Wales. The findings provide a first indication of the orders of capital expenditure needed to achieve standards envisaged for 1980 by the river authorities and how that expenditure might affect the quality of rivers. Similar work carried out in Scotland is described briefly in the Annex.

3. Taken in conjunction with proposals for the reorganization of Water Services to be introduced in Parliament in 1972/74 and increased powers which the Government is seeking to reduce the pollution of rivers and canals, there will be the machinery, the resources, the knowledge and the will to achieve over the next decade:

- (a) a massive clean-up of our rivers and estuaries;
- (b) tangible progress in safeguarding the seas surrounding Britain from any further massive pollution;
- (c) an extensive opening up for sport, recreation and amenity of most of our inland waters, including rivers, canals and reservoirs.

THE 1970 RIVER POLLUTION SURVEY (England and Wales)

Volume One

4. The first volume of the survey was published in December 1971. It classifies lengths of rivers into four categories according to their degree of purity or pollution and gives the results separately for non-tidal rivers, tidal rivers and canals for England and Wales as a whole, and for each river authority area separately. It also contains an assessment of the lengths of river which could be used as further sources of public water supply.

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5. The report gives ground for hope that even in an already highly industrialised and urbanised country, economic advance can continue without further damage to our water resources and amenities. It shows that there have been noteworthy improvements in the condition of our rivers in recent years. But it also shows that intensive efforts will still be needed for many years ahead if the stretches of worst pollution are to be eliminated. Although expenditure on sewerage and sewage disposal has risen considerably the survey shows that there are still badly polluted large rivers in the main industrial areas, for instance in South-East Lancashire, South Yorkshire, Tyneside, Teesside and the West Midlands.

6. To reduce the pollution of rivers, faster as time goes by, painstaking attention to the means of pollution prevention will have to continue. The process for the treatment of liquid wastes before discharge to rivers will have to be improved and new ideas developed. Accordingly, the Government have indicated their willingness to see capital investment on sewerage and sewage disposal over the five years 1972/73 to 1976/77 increase by nearly 50 per cent to £962 million, compared, at 1972 prices, with an expenditure of £683 million, over the last five years.

Volume Two

7. The second volume, to be published before the end of 1972, gives the details of the causes of river pollution. It classifies all discharges of sewage and industrial effluent into rivers and canals according to the chemical quality of the receiving water; gives details of discharges of crude sewage and unsatisfactory storm overflows; estimates the order of magnitude of the cost of remedial work; and forecasts the possibilities of river improvement over the next decade. Additionally, it includes the report of a supplementary survey by the Confederation of British Industry giving the first comprehensive account of the methods of disposal and costs of treatment of industrial effluent, analysed by type of industry.

8. As the findings on these issues are particularly relevant to the development and implementation of a soundly based programme to reduce river pollution, advance extracts from the summary chapters and tables in Volume Two of the River Pollution Survey have been published recently by the Government(1). A summary is given below, highlighting in particular some of the financial implications of the improvement programme. Relevant statistics are given in Annex A.

(1) Volume 2 of the River Pollution Survey 1970 of England and Wales, Circular 64/72 (Department of the Environment), Circular 127/72 (Welsh Office). 10th July, 1972.

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(1) River water quality and discharges: survey results

9. The survey showed that badly polluted rivers tend to be associated with the most densely populated areas. More than half the total population of 43½ million people recorded as discharging sewage effluent or crude sewage to rivers and canals, discharge to poor quality or grossly polluted waters. The lengths of rivers and canals in these two classes is 2,772 miles or just over one tenth of the total length recorded in the survey.

10. Overall, rivers and canals received the liquid wastes from 88.5% of the population of England and Wales. Excluding industrial cooling water, about half of the effluent came from industry, either in the form of direct discharges from industrial premises to rivers and canals or discharges mixed with treated sewage effluent or crude sewage.

11. A discharge was classified as satisfactory if it generally complied with the standard at present required of it by the river authority: it implied no judgment of the standard itself and the discharger might disagree with the assessment. On the basis of this definition:

- (a) About 37% of all the discharges of sewage effluent were considered to be unsatisfactory, amounting to nearly 60% of the volume of sewage effluent discharged.
- (b) Almost all the discharges of crude sewage were considered to be unsatisfactory.
- (c) Excluding discharges consisting solely of cooling water (a high proportion of which were satisfactory) about a half of all the industrial effluent discharges were unsatisfactory and a similar proportion of the volume was not up to standard.
- (d) In addition more than 2,000 storm overflows, almost all discharging to non-tidal waters, were recorded as needing remedial works.

(11) Forecasts of expenditure

12. According to the Survey, the expenditure required to bring all discharges of sewage and industrial effluent up to the standards that river authorities expect to impose by 1980 would be about £610 million (at constant 1970 prices) which represents about £12 per head of the present population. The total is made up as follows:

- (a) £425 million for remedial works for improving existing and treating new discharges of sewage effluent;

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- (b) £145 million for remedial works for dealing with discharges of crude sewage;
- (c) £40 million for remedial works for improving existing discharges of industrial effluent.

The last figure is considered to be low, however, as industry incurs expenditure on discharges other than to rivers and canals, e.g. on pre-treatment of wastes before discharge to controlled waters and sewers. Additional information about these costs was obtained through the Confederation of British Industry survey. This showed that between 1960 and 1968 industry spent about £63 million on capital works for pre-treatment of industrial effluent and that an expenditure of about £36 million was expected in 1969/70.

13. Estimates given in the report do not include expenditure on sewerage or on replacement of worn-out equipment. These could well account for as much again (a further £600 million). Neither do they include any costs associated with remedial works on storm overflows, because insufficient information was available on which to estimate with any degree of accuracy. A desk cost estimate was however made, suggesting that these latter remedial works might cost as much as £170 million.

14. Expenditure on remedial works to improve discharges of sewage effluent and crude sewage was divided into expenditure required immediately (effluent already unsatisfactory) and expenditure required in the future (effluent satisfactory at present but likely to become unsatisfactory before 1980 as population and flows increase). Out of about £570 million likely to be required under these heads (see paragraph 12, items (a) and (b)) a total of some £410 million was shown to be needed immediately.

(iii) Forecasts of improvement in river quality

15. The effect of the overall estimates of expenditure on the works required for discharges to comply with the standards expected to be required in 1980 would be to greatly reduce the pollution of rivers but not eliminate it. Expenditure of the order outlined above would be expected by 1980 to cut the mileage of grossly polluted non-tidal rivers by about 80%. By that date four-fifths of all non-tidal rivers would be free of pollution and there would also be marked improvements in tidal rivers.

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16. But, even with extended powers of control and consequent additional expenditure required to comply with conditions of consent to discharge, it would not be possible to bring up to Class 1 or Class 2 ("free of pollution" or "mildly polluted") standards all the rivers which receive discharges from densely populated and highly industrialised areas without much higher standards than the river authorities propose to require by 1980. The estimates in the report do not cover the considerable expenditure which would be required for upgrading all rivers to Class 1 or Class 2 but only the costs of objectives which appear to the river authorities to be attainable in the next decade by the use of their existing powers of control.

(iv) 1972 updating

17. The results of a further survey of the condition of the rivers at the beginning of 1972 confirm the general trend of improvement and indicate some acceleration in it.

WHO PAYS

18. Under present legislative provisions the cost of treating liquid wastes to the standard required by a river authority for discharge to rivers is borne by the discharger. The industrialist who discharges direct to rivers or canals must install and meet the capital and running costs of any necessary treatment plant on his own premises. The industrialist who discharges to the public sewers may be required to pay the local authority, as sewerage authority, the cost of receiving, conveying and treating his waste. The only exceptions are a number of discharges covered by old agreements which contain no provision for charging or for variation.

19. The practice of local authorities on charging varies considerably. Some charge little or nothing (as ratepayers, industry already meets part of the local authority's general expenditure on sewerage and sewage disposal through the general rate - a local tax based on the annual value of the property occupied); others charge the full cost. The Government have announced their intention of legislating to provide that dischargers shall meet full costs and to enable the authorities to terminate those agreements referred to in the preceding paragraph, so as to impose full charges in those cases too.

20. Grant aid or subsidy specifically for treatment of liquid wastes is small in amount - there are powers for the Exchequer to assist in the provision of sewage disposal works where these are needed to facilitate the establishment of industry in development areas (broadly areas of high unemployment); in these areas industry itself may also qualify for

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subsidy for the installation of its own treatment plant ancillary to production plant. Towns which are expanding rapidly to accommodate overspill from a large urban area may also qualify for Exchequer assistance to alleviate sharp increases in general rates due to expenditure on sewage works in advance of the arrival of the additional population. More generally, the Exchequer makes a substantial contribution (nationally of the order of 58%) to local authorities in aid of rate-borne expenditure on all their services (including sewerage and sewage disposal).

21. The Government have proposed reorganization of the administration of water services from 1st April, 1974. Nine Regional Water Authorities in England and a Welsh National Water Development Authority will together become responsible for all services, including sewerage and sewage disposal, and will meet their total expenditure from direct charges.

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1970 RIVER POLLUTION SURVEY

SUMMARY OF KEY STATISTICS: ENGLAND AND WALES

Item	Class of water				Total
	1	2	3	4	
I. RIVER QUALITY (miles in 1970)					
A. Non-tidal rivers	17,000	3,290	1,071	952	22,313
B. Tidal rivers	862	419	301	209	1,791
C. Canals	700	601	136	103	1,540
TOTAL	18,562	4,310	1,508	1,264	25,644
II. POPULATION (millions in 1970) DISCHARGING TO:					
A. Non-tidal rivers	10.21	5.79	3.43	8.30	27.74
B. Tidal rivers	1.58	1.98	9.73	2.06	15.35
C. Canals	0.03	0.08	0.17	0.03	0.30
TOTAL: all inland waters	11.82	7.85	13.33	10.39	43.39
III. VOLUMES OF UNSATISFACTORY DISCHARGES (million gallons per day in 1970); percentages of total discharges are given in brackets					
A. Non-tidal rivers:					
- sewage effluent	252(48)	126(39)	139(32)	336(64)	853
- crude sewage	0.6(100)	0.6(100)	0(-)	0.02(100)	1
- industrial effluent					
(i) excl. solely cooling water & minewater	109(29)	41(25)	117(42)	147(63)	414
(ii) solely cooling water	8(1)	49(4)	86(9)	137(8)	280
B. Tidal rivers:					
- sewage effluent	18(38)	38(62)	403(78)	6(39)	465
- crude sewage	27(63)	49(99)	71(99.7)	99(99.9)	246
- industrial effluent					
(i) excl. solely cooling water & minewater	89(30)	21(27)	76(14)	308(86)	494
(ii) solely cooling water	120(4)	0(-)	0(-)	6(1)	126

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Item	Class of water				Total
	1	2	3	4	
III. (Contd)					
C. Canals					
- sewage effluent	0.5(49)	3(56)	0.5(5)	0(-)	4
- crude sewage	0(-)	0(-)	0(-)	0(-)	0
- industrial effluent					
(i) excl. solely cooling water & minewater	5(84)	1(75)	6(51)	8(72)	20
(ii) solely cooling water	2(10)	6(25)	4(3)	7(37)	19
IV. ESTIMATES OF COSTS OF REMEDIAL WORKS (£million)					
A. Non-tidal rivers: total	132.3	66.9	45.4	111.8	356.4
- sewage effluent	125.0	63.6	40.7	102.9	332.2
- crude sewage	1.6	0.9	-	-	2.6
- industrial effluent	5.7	2.4	4.6	8.9	21.6
B. Tidal rivers: total	35.0	57.3	66.7	90.9	249.9
- sewage effluent	23.5	19.6	43.6	4.9	91.7
- crude sewage	10.7	36.1	20.4	74.6	141.8
- industrial effluent	0.8	1.5	2.7	11.4	16.3
C. Canals: total	0.4	1.0	1.4	0.4	3.1
- sewage effluent	0.3	0.8	1.1	0.1	2.3
- crude sewage	-	-	-	-	-
- industrial effluent	-	0.2	0.2	0.3	0.8
TOTAL expenditure	167.7	125.2	113.5	205.1	609.4
V. MILES EXPECTED TO BE UPGRADED (To a higher class)					
A. Non-tidal rivers	-	872	781	753	2,406
B. Tidal rivers	-	116	119	150	385
C. Canals	-	25	53	89	167
TOTAL: miles	-	1,013	953	992	2,958

Classes of Water: 1. Unpolluted and recovered from pollution
2. Doubtful, needing improvement
3. Poor, requiring improvement as a matter of some urgency
4. Grossly polluted

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RIVERS POLLUTION SURVEY OF SCOTLAND

1. The Report of a Rivers Pollution Survey of Scotland, published in April 1972, classified Scottish rivers into four categories similar to those employed in the English survey. It showed that only a small proportion (about 6%) of the 4,600 miles of principal rivers surveyed throughout Scotland were either of poor quality or grossly polluted; virtually all of these were in the relatively industrialised central lowland belt where they accounted for 20% of the 1,178 miles of river there.
2. Much of the responsibility for this river pollution lies with inadequately treated local authority discharges of sewage and trade effluent and Government are, as in England and Wales, prepared to support an increase of capital expenditure on sewerage and sewage disposal to more than £100 million in the five years 1972/73 to 1976/77 compared, at 1972 prices, with an expenditure of £60 million over the previous 5 years.
3. A considerable part of this money will be spent on improving discharges to estuaries and other tidal waters to which about two-thirds of the population of Scotland drains. At present most pollution occurs in the basins and estuaries of the Clyde and Forth rivers; by the second-half of the 1970s the Forth, which is still a salmon river, should be generally clean throughout its length and by 1980 substantial improvements should be apparent also in the Clyde.
4. In Scotland the full range of water services, including sewerage and sewage disposal, will be the responsibility of new multi-purpose regional authorities. These are due to become operational as from 1st April, 1975.

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REGIONAL CONTROL OF COASTAL POLLUTION : CASE OF SAN FRANCISCO
BAY (UNITED STATES)

The San Francisco Bay report was intended to illustrate a multi-institution and civic approach to identifying and solving major and diverse environment problems in a specific region. The San Francisco area offers a fascinating field for such an investigation, unfortunately too fertile for a ten-page report to do it justice. A new paper is needed as a sequel to the one already written by Mel Scott. On the other hand, the action taken for the planning and protection of an ocean bay, as a single but complex environmental resource, is unique and exemplary. The report on such action in the San Francisco Bay is therefore submitted by the United States Government as a significant case study.

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1.4 THE SAN FRANCISCO BAY EXPERIENCE
REGIONAL PLANNING AND CONTROL OF THE WATERS AND SHORELINE OF A BAY

by Clifford W. Graves, Acting Director
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United States Department of Housing and Urban Development

Introduction

In 1969 the San Francisco Bay Plan received an American Institute of Planners Award of Merit in recognition of its methodology and relevancy. It also won the political support necessary to secure the establishment of a permanent commission to carry out the plan. For the first time, a governmental organization in the United States had made a breakthrough in the effort to implement regional planning despite seemingly insurmountable political difficulties.

Too often, regional and local planning agencies are unable to create plans that are both technically sound and enforceable because the agencies get bogged down in the multiplicity of governmental forces that overlap, duplicate each other, and even conflict with each other. In environmental matters the situation is even worse, because ecological effects do not confine themselves within political jurisdictions. Too often also, these agencies find themselves trapped between efforts to preserve private ownership rights and efforts to decide which land uses will best serve the public interest. Further, the agencies are hampered by the slow, incremental process of effecting change through our democratic process.

This paper will attempt to trace chronologically the story of the San Francisco Bay Plan. It will emphasize the process through which a well-organized and cooperative effort that included everyone in a nine-county area in Northern California -- citizens, politicians, the press, local and state government, and urban planners -- succeeded in making the political process work to their advantage in the struggle to end the environmental deterioration of San Francisco Bay.

Study of the Problem

Although the Bay has existed for several hundred thousand years, its evolution as a symbol of America's concern for the environment dates back about ten years. It began as a citizens' movement, and a modest one at that.

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A few citizens began to notice that the Bay was getting smaller. The views from hillside homes had more land and less water as the weeks went by. The new land seemed to be for garbage dumps, freeways and airport runways, which seemed an odd way to use a waterfront. The citizens began to discuss the problem, and Save San Francisco Bay Association was formed.

The Association was concerned, but it needed facts. The University of California's Institute of Governmental Studies set out to get them. In 1963 its report, "The Future of San Francisco Bay" authored by Mel Scott, was released. The facts were startling:

1. The Bay was getting smaller. It had shrunk from, 680 square miles in 1850 to about 430 in 1963.
2. The shrinking process was the work of man, through diking and filling. The dickers and fillers were a diverse group: farmers, port authorities, a salt company, industries, the State highway department, hunters, garbage dump operators, airport authorities, real estate developers, local governments, and even the gold miners, whose hydraulic techniques started millions of tons of silt on its way down the rivers to the Bay.
3. The shrinkage would continue. Pending development proposals alone would fill another 59 square miles, or nearly 15% of what was left.
4. The Bay was shrinking because it was divided. Nine counties and three dozen incorporated cities bordered on the Bay. Each had its own problems and needs. In addition, several private interests claimed property in the Bay.

Why is the Bay so tempting? For one thing, most of it is so shallow it invites filling. Seventy percent of the Bay is less than 18 feet deep at low tide, and the U.S. Army's Corps of Engineers has estimated that some 248 square miles are "susceptible of reclamation". This makes it possible to create valuable waterfront real estate and to add land to a crowded urban area at a very low cost per square foot.

5. The Bay was getting dirtier. The wastes of more than 6 million people and their industries, plus agricultural residues from the Central Valley, were being poured into the Bay, with varying levels of treatment. Although untreated discharges were rare, the sheer volume of wastes was increasing faster than treatment facilities could be upgraded. While not as polluted as many other estuaries, the Bay was unsafe for swimming, shellfish were contaminated (where they still existed), and the future was not bright.

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6. The Bay was being neglected. Not only was it being destroyed, its productive uses were hardly being tapped. It was cut off from the public by freeways, salt ponds, industry and garbage; only 4% of the shoreline was accessible to the public. Fewer than 10 waterfront parks existed, and some of these were not fully developed. Even the maritime and industrial potential of the Bay seemed largely untapped.

University research projects rarely make headlines, but this one was an exception. Newspapers devoted considerable space to it; the Bay began to be discussed as an issue or crisis, rather than a romantic backdrop to regional activities. The report caused a stir at the State Capitol as well, since it politely but clearly pointed out that many of the current problems were a direct result of State actions over the past 100 years.

It was decided that it would be politically impossible to ask the California State legislature for a permanent Commission right away. Therefore a cross-section of citizens and business groups encouraged the legislature to create a temporary study commission to check Mr. Scott's findings and thereby drum up support for a permanent commission. In 1964 the Legislature established the San Francisco Bay Conservation Study Commission, consisting of legislators and private citizens, to conduct hearings around the Bay. Its specific charge was to recommend appropriate legislation to deal with Bay development problems.

The Commission was startled to find that Scott had probably understated the problems. It was also struck by the diversity of interests in the Bay. Nearly everyone - children, conservationists, businessmen, and the rich and the poor - had some kind of stake in its future. Six months after its establishment, the Commission submitted its final report.

The Bay Conservation and Development Commission

The Commission recommended creation of a San Francisco Bay Conservation and Development Commission (BCDC), with the power to plan for the entire Bay and shoreline and, the power to control all dredging, diking and filling in the Bay by any public or private agency. This power was extremely important to the success of the project. Originally conceived as an interim means to prevent further damage to the Bay, BCDC's role as watchdog over the Bay helped it to gain popularity with the general public.

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The bill to create a BCDC was introduced in the 1965 Session of the Legislature. The battle for its passage was interesting in that conservation was never a major issue. No one openly opposed the intent of the bill (protection of a valuable resource clearly threatened by uncoordinated public and private actions); there was opposition to its institutional effects, principally by some local governments and property owners.

Fortunately, the bill had the support of powerful legislators, and it passed. After September 17th, 1965 no one was allowed to dredge, fill or place pilings in the Bay without securing a permit from the San Francisco Bay Conservation and Development Commission.

In the act establishing the BCDC, the Legislature declared that "the public has an interest in the Bay as the most valuable single natural resource of an entire region". It said the Bay operates as a "delicate physical mechanism in which changes that affect one part of the Bay also affect all other parts". The Legislature said further that the "present uncoordinated, haphazard manner in which the San Francisco Bay is being filled threatens the Bay itself and is therefore inimical to the welfare of both present and future residents of the area...".

It noted that "no governmental mechanism exists for evaluating individual projects as to their effect on the entire Bay... (and) a new regional approach is necessary". Thus, the Legislature declared, "it is in the public interest to create a politically responsible, democratic process by which the San Francisco Bay and its shoreline can be analysed, planned and regulated as a unit."

The legislation required that anyone wishing to fill any of the Bay obtain a permit from BCDC. And it specified that a permit may be granted only if a project is (1) "necessary to the health, safety or welfare of the public in the entire Bay area", or (2) "of such a nature that it will not adversely affect the comprehensive plan being prepared".

The Commission was large (27 members) and balanced (half represented local governments, the remainder State and citizen interests). Its specific charge was to prepare a comprehensive and enforceable plan for the conservation of the waters of the Bay and the development of its shoreline. It was to present its plan, and recommendations for a permanent organization to carry it out, to the 1969 Legislature. Its budget would total less than \$700,000 during its three-year planning period.

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The process had entered a critical phase. The facts about the Bay were clear. The BCDC now had the difficult task of determining how the Bay could best be used for the benefit of the region and how the Bay could be permanently protected from abuse.

The San Francisco Bay Plan

The Commission began its task by dividing up the Bay. This time it was a division by function, 23 functions. Each was the subject of a separate study by the staff or a consultant. The functions ranged from air transportation to water quality.. Each study had the same basic purpose - to determine:

1. How does this activity affect the Bay and the Bay area and, given present conditions, what will be its future effects?
2. How can the positive effects be maximized without adversely affecting the Bay as a body of water?

Each report was presented to the Commission along with recommended "tentative conclusions" which would serve as inputs to the plan. The Commission was assisted by a Technical Advisory Committee and, after public hearings, would formally adopt a set of conclusions. This process had several advantages:

1. It assured each function its "day in court". Maritime commerce, marshes and mud-flats, and housing, each received the full attention of the Commission.
2. The planning was done in the public eye. The "back room" technocratic image of planning did not apply. In complex projects, there is a tendency for planners and engineers to retire into their surveys and then emerge months or years later with a plan. There was no opportunity for that at ECDC. Commission staff tried to fill every speaking request made; engagements averaged about two or three a week.
3. The Commission and the public learned about the Bay in "bite-size" chunks. The problems and wonders of the Bay were communicated over a three year period, rather than in a single document.
4. Issues and conflicts were identified well before crucial decisions had to be made. There were few surprises when the plan was prepared because most critical problems had been discussed and resolved long before. Great care was taken to make sure to the greatest extent possible that each report was seen by any and all affected parties. In the case of very sensitive subjects, "report authors interviewed key protagonists and then confidentially reviewed elements of the report with them, a process that gradually won the confidence of most of the people involved".

The separate studies formed the pieces of a jigsaw puzzle that became the San Francisco Bay Plan. Most of them had value in their own right, as they brought together and presented in readable form some little-known but very important aspects of regional development.

The publication of the Commission's plan in late 1968 was remarkable principally because it proposed nothing new. The Commission had worked to keep itself in the public eye for three years, and the basic issues were already resolved.

Some conservationists charged that the plan embodied several unfortunate compromises. Would-be developers criticized many of its provisions in unmistakable terms. But by and large it was acclaimed as a remarkable plan - a far cry from the usual planning document couched in unclear, idealistic and platitudinous generalities. Some of its principal recommendations and policy statements were:

1. The most important uses of the Bay are those providing substantial public benefits and treating the Bay as a body of water, not as real estate.

2. All desirable, high-priority uses of the Bay and shoreline can be fully accommodated without substantial Bay filling, and without loss of large natural resource areas. But shoreline areas suitable for priority uses - ports, water-related industry, airports, wildlife refuges, and water-related recreation - exist only in limited amounts, and should be reserved for these purposes.

3. The plan proposes minimal filling, a maximum water surface area, and maintenance of high water quality and adequate fresh water inflow in order to benefit recreation, provide scenic enjoyment, maintain fish and wildlife resources, lessen water pollution, and to moderate the weather. The plan also calls for maintaining and restoring marshes and mudflats and recommends that the diked salt evaporation ponds and managed marshlands (most used as duck hunting preserves) not be converted into urban development.

4. The plan proposes the reservation of some 19,000 acres of additional land for industries specifically requiring waterfront sites, with the locations specified in a series of maps.

5. The plan proposes expansion of some port facilities, to keep San Francisco Bay in the forefront of the world's great harbors. But, it says, any dredging or filling "should be in accord with an overall regional port development plan".

6. The plan proposes a regional airport system. Pending its completion and the building of "reliever" airports in the region, new general aviation airports should be built away from the Bay, and expansion of existing airports into the Bay should be permitted "only if no feasible alternative is available".

7. The plan offers detailed recommendations for providing recreation - marinas, boat launching ramps, fishing piers, hiking and biking paths, beaches and commercial recreation facilities oriented to the water. The plan includes about 5,000 acres of new parks on the waterfront. But even if all these marines, parks, beaches and the like were established, there would still be only a small part of the shoreline open to the public. Therefore it recommended that maximum feasible opportunity for pedestrian access to the waterfront should be included in every new development in the Bay or on the shoreline, whether it be for housing, industry, port, airport, public facility, or other use. BCDC estimates that the present purchase price of all 5,800 acres of recreational land and 1,600 acres of proposed wildlife refuges is \$30 million to \$50 million. It says the first order of business for recreation funds should be to "build fishing piers, beaches and other shoreline recreational facilities in urban areas where large concentrations of persons live near the Bay but are presently unable to use or enjoy it, i.e., areas occupied by lower income groups".

8. The plan includes guidelines for attractive development of the Bay shoreline. Similarly, it calls for drives and "vista points" to take maximum advantage of scenery.

A Permanent Agency

The BCDC recommended the creation of a regional agency with power to analyze, plan and regulate the entire Bay and shoreline as a unit. Thus, it should have limited jurisdiction over the shoreline as well as the Bay itself. This jurisdiction, which would vary from 100 feet up to an occasional maximum of 1,000 feet, should include enough shoreline land to make effective use of each prime site.

In some cases the regional agency would "designate and reserve the shoreline areas needed for each priority use, in a manner analogous to zoning". In general, shoreline development would have to be considerate of public access, etc. The agency would have detailed permit procedures for restricting filling and dredging to conform with policies. As its first choice for managing the Bay, BCDC recommended a limited regional government agency, multi-purpose in nature, to consider the San Francisco region's overall needs and avoid duplication. Barring that solution, a permanent BCDC should be established, to be concerned only with this Bay.

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Massive public support for a permanent Bay planning and protection agency, added to the support of the Governor and key legislators, plus threats of Federal intervention if the State failed to act, resulted in passage of a bill establishing BCDC as a permanent agency, with its fill and dredging powers plus limited control of shoreline development. The San Francisco Bay Plan was adopted as the basis for the Commission's activities. It has appointed Fill Review and Design Review Boards to review plans and to formulate more detailed guidelines to ensure safe, attractive development.

The permanent BCDC is now one year old. At least one thing is clear: the job of conserving the Bay is not over; it simply has entered a new phase. The BCDC's problems as a permanent agency - keeping a plan up to date, responding to new challenges and proposals, and getting positive things done while preventing harm to the Bay - are different but not less challenging. Its job is made easier by a growing national concern for the environment, and the national attention focused on its pioneering effort.

Some lessons

An experience is worth little unless one learns from it. The San Francisco Bay Experience offers many lessons for those concerned about the conservation of valuable natural resources. The Conservation Foundation, in its 1969 report on the BCDC program, highlighted these as the key ingredients leading to success:

- A resource that excites the enthusiasm of citizens from all walks of life. In the view of BCDC's executive director, Joseph E. Bodovitz, the Bay became a "symbol of environmental problems", and people began to get a psychological feeling that "if you can't do something about a problem as relatively simple as this you'll never do anything".

- A strong, factual piece of research (such as the University of California Institute of Governmental Studies report) to justify and back up a public action program to protect or enhance the resource.

- A nucleus of concerned, hard-working citizens - many of them politically astute and able to arouse the support of others (including the press) - to ferment political pressure, generate timely publicity, and raise money.

- Powerful and effective legislative support to take up the cause.

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- A law creating an effective planning agency which even during its study and planning period, could protect the object of its concern. For example, it was extremely important that BCDC had power over fill permits during its planning years. Aside from the obvious advantages, says Bodovitz, this "keeps everybody out of the ivory tower approach, because a good part of the time is spent dealing with real problems. And this in turn reinforces the validity of your planning, because at the same meeting you're deciding about planning ideas while you're trying to decide if somebody should fill in this area. It also gets people to meetings." And it creates a "much livelier interest in the press".

- An agency with a membership broad enough to represent all significant affected interests.

- An agency that operates openly, with public hearings and public debate. In addition to the obvious merit, this kept the press and the public interested and involved in shaping the future of the Bay. The BCDC plan thus evolved over a period of time, as specific bay problems - such as fish and wildlife, recreation, airports, etc. - were presented to commission members in 23 individual reports and summaries. The agency thereby obtained policy statements on each issue as work proceeded, and ended with a strong plan.

- Finally, of course, a resulting plan that is needed, that will achieve the desired environmental results, that is enforceable, that is respected, and that draws wide support. And also, perhaps, a plan that is adjusted to political, fiscal and legal realities.

To these, two more points should be added:

1. A commitment to the wise use of a resource, not preservation for its own sake. Mere preservation of a major estuary in a growing metropolitan area is not only politically unrealistic, it underestimates the ability of these resources to serve the environmental and economic needs of their regions.

2. Recognition of environmental protection as a political, not a technical problem. There is no question about the complex nature of ecological and economic systems, and how little we really know about them. However, the "need for more study" is too often used as an excuse for inaction. BCDC exemplifies a vehicle for turning planning into a physical reality - a transformation which requires astute and concerted political action in the public interest.

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PROBLEMS OF THE NEW TOWNS : THE INTEGRATION OF ENVIRONMENT
AT THE PLANNING AND DESIGN STAGE OF NEW TOWNS : LE VAUDREUIL
(FRANCE)

Among the "new towns" being built in France, Le Vaudreuil, on the Seine between Paris and Le Havre, will be less subject to the urgent urban pressures which prevail elsewhere. Thus, the authorities have here been able to experiment with two lines of study :

- flexible urban planning by first creating a "town nucleus" which will possess all the characteristics of an urban area but will be capable of developing in a number of very different ways. The proposed size of this nucleus (5 years : 15.000 inhabitants) will enable almost all the functions of a developing town to be carried out (this development will continue subsequently with the participation of the inhabitants), but on a small enough scale not to mortgage its future.
- the establishment of a research and action mechanism to make the control, at source, of nuisances deriving from urban spread an integral part of planning. The new town of Le Vaudreuil was chosen by the French Government for a detailed study of all measures capable of keeping urban nuisances at the lowest possible level. Le Vaudreuil is therefore a "test bench" on which various full-scale practical measures, both technical and legislative, suitable for subsequent general application in France, and even in other countries, can be studied.

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1.5 THE PROBLEMS OF NEW TOWNS - THE INTEGRATION OF ENVIRONMENT
AT THE PLANNING AND DESIGN STAGE OF NEW TOWNS: THE CASE OF
LE VAUDREUIL

by Mr. Lacaze - Directeur de la Mission d'Etude du Vaudreuil
and Mr. Pérelman - Chargé de mission - Etablissement Public
de la Ville Nouvelle du Vaudreuil

1. NEW TOWNS IN FRANCE

The expression "creeping urbanization", applied to large cities built around an ancient town centre, reflects the difficulty of organizing the development of a society: there is an increasing tendency towards the more or less spontaneous extension of "dormitory suburbs" and towards fragmentary urban growth.

During the first half of the century, town planners attempted to combat these tendencies in two ways:

by erecting a barrier against encroachment; this was the "city limit" solution, as in the case of the London "Green Belt" and the "Padoq" for the Paris area in the 1950s;

by intentionally moving away from the main stream and patiently constructing something new elsewhere. The most obvious expression of this tendency is to be found in the "new towns".

The peculiarity of the French "new towns" is that they are not intended to be satellite or independent communities but secondary towns, neither wholly differentiated nor specialised but "purpose-built", neither concentrated nor dispersed but "points of attraction" integrated into the area as a whole.

This concept illustrates the two guiding principles of discontinuity and polynuclearity within the framework of the unity of an urban area. What is in fact involved is the birth of a long-term urban strategy, in which numerous complementary methods are combined in order gradually to achieve new polynuclear structures.

A policy of building new towns was essential, mainly in order to curb the growth of the Greater Paris area (five new towns). Four other new towns bear witness to the determination that the expansion of the major provincial cities should take place under satisfactory conditions. The new towns represent an important strategic factor in a master town-planning and national development policy.

1.5.2

The French new towns, which are designed to receive a gradually increasing population of 100,000 to 400,000 inhabitants by the end of this century, are very different from one another, but they all pursue the same three objectives:

Integration into the surrounding urban system: thanks to its communications, the new town forms an element of a larger system.

The determination to ensure spatial coherence between home, jobs and social, cultural and leisure amenities.

The determination to create an environment with a distinctively urban character, concentrated, varied and with a drawing-power covering a wider area than the town itself.

In short, the new towns are very important factors in a policy of concerted operational town-planning.

2. THE NEW TOWN OF LE VAUDREUIL

Of the eight French new towns, all of which are implicitly experimental in character, Le Vaudreuil lays special emphasis on this function, both as regards planning methods on the one hand and nuisances and pollution on the other hand.

The new town of Le Vaudreuil, near Rouen, just under 100 km west of Paris, is based on the plan outlined in the general development scheme for the Lower Seine. The special aim of this scheme (1967-1968) was to strengthen the existing urban framework in the Rouen-Evreux-Le Havre sector, so as to counterbalance the influence of the Paris area.

It was therefore designed to encourage the growth of a Greater Rouen, whose urban area would increase from 500,000 to 1,200,000 inhabitants by the end of the century. Furthermore, the authors of the scheme suggested that, in order to promote balanced employment, tertiary activities should be encouraged and that advantage be taken of the suitability of the site for recreational purposes. Finally, this new town project was a practical demonstration of the intention to carry out a pilot-operation in the field of town planning and architectural research.

In pursuance of these aims, the team responsible for the Le Vaudreuil study was obliged to give considerable thought to the most suitable methodology for building a real town, so as to meet the wishes of the local authorities concerned. The result was the "germination" theory.

At the same time, the Government decided that Le Vaudreuil should be used as a "field laboratory", where urban pollution and nuisances could be studied at the source and where everything would be done to keep them as low as possible. The purpose of these two policies was the deliberate

creation of a high-quality environment for the new town and, in as much as an "environment policy" is concerned with creating and improving a new town rather than rehabilitating an old one, particular attention was given to this top-level experiment.

3. EXTENSIBLE TOWN PLANNING

The principle behind the Le Vaudreuil experiment is primarily based on the fact that a town cannot be regarded as a finished product whose content and type of organization in space can be planned twenty or thirty years ahead. This type of concept is open to serious miscalculations, as is only too often the case where town planning is concerned, since it does not allow the inhabitants any freedom to determine their own surroundings and leads to rigid structures which slow down those very innovations and changes which take place more and more rapidly.

New and more flexible methods can even take into account the main factors which condition all town planning: the time (and place) of contingencies; men (and their rôle in the collective process of creating urban space); the town about whose organic complexity little is yet known.

In its attempt to take account of these considerations, the Le Vaudreuil study group feels that, in order to minimise the necessarily artificial character of the take-off phase of the town's development, the first operation must be limited in duration and extent but cover the widest possible programme of dwellings, amenities and jobs for a population of approximately 15,000 inhabitants. This is what is known as the "nucleus" of the town.

In the second phase, the establishment of what will already be a considerable population will give birth to a community which will gradually be able to undertake responsibility for the development of the town, which must be the product of a continuous dialogue between the various persons concerned at local, regional or national level. For this purpose, a series of formal or informal working groups will be set up.

A concrete study of the first operation, which can be completed within the relatively short period of approximately five years, will take on its full significance only if it is examined in the light of a global study of the main overall characteristics of the town in a long-term perspective of some thirty years. The purpose of this global study will not be to lay down the complete future organization of the town but, on the contrary, to discover the greatest possible number of ways in which it can grow, once the "nucleus" has been completed. It is however essential, in order to plan the main lines for the transport infrastructure and the general utilisation of the various parts of the site: housing, industry, leisure etc.

The method thus comprises three main topics for thorough and simultaneous investigation:

(a) The programme

The aim is to define the "content" of the town, not only quantitatively, at different stages of its development and according to various assumptions, but also from the qualitative aspect: not only the number and type of dwellings, jobs and facilities but also their mutual relationships, the criteria for their siting and the influence they will exert.

(b) The system of urban organization

This system will provide the physical support for the development of the town. The traditional site plan must be replaced by the "urban structure" concept, which will permit flexible design and development, give the town individuality and coherence, and demonstrate the resultant principles of town planning and the "rules of the game" for filling the space available.

(c) The site and its regional environment, which will be studied in order to determine the overall long-term master plan and enable the exact location for the "nucleus" of the town to be chosen.

A. The principle of the "nucleus" of the town

The study team intends to construct the "nucleus" of a town which will possess all the characteristics of an urban area but will be capable of developing in a number of completely different ways. The proposed size of this "nucleus" (five years: 15,000 inhabitants) will enable practically all the functions of a developing town to be carried out (this development will continue subsequently with the participation of the inhabitants), but on a small enough scale not to mortgage its future.

Study of the "nucleus"

This study recommends a flexible organization for the urban area. The proposals are still theoretical, and have not yet been put into practice; they are based on an assumed density of 35 to 45 dwellings per hectare (2.47 acres) and take account of the various programmes (quantitative description of types of surface required for dwellings, jobs, facilities and infrastructure, guidance on relations to be established between the various components of the "nucleus"). Reference is also made to the principles deduced from the observation of existing cities, as expressed in numerous recent architectural studies: the city is a living body. It cannot be formed by simply juxtaposing a number of heterogeneous buildings. Between its various elements there exist relations which are essential to its harmonious working and which make it a coherent system; each element of the city is dependent on the

For this reason, the various urban functions (dwellings, factories, offices, schools, sports facilities) must not be systematically separated from one another by rigid zoning. On the contrary, a suitable mingling of these various functions gives urban life its animation, only those installations that constitute a nuisance for their immediate environment being isolated. Finally, a town must be in a state of continual development and it is even likely that it will develop more and more quickly in the future.

B. Rules for planning the "nucleus"

The following rules are applicable to the "nucleus", which is a coherent system capable of development both as a whole and in its component parts.

(a) The component parts of the town are as follows:

Dwellings and adjacent areas (entrances, passageways, technical areas etc.). The programme of study covers approximately 4,000 dwellings with an average density of occupation of 3.5 persons.

Secondary and tertiary places of employment (small factories, workshops, laboratories, warehouses) which can be located within the town, and offices.

Educational, social-educational, sports, health, welfare, cultural and administrative facilities.

Infrastructure to allow the movement of the different utilities (water, electricity, gas, waste water) and of individuals by various means (cars, public transport, bicycles, pedestrians, telephone etc.).

In order to further mobility and facilitate the future development of the town, certain architectural and planning arrangements have been examined, viz:

When designing an element, a distinction has been made between the fixed (durable) part and the mobile part (the use of which may change as time goes by). For instance, the buildings may consist of a load-bearing framework (fixed) and of panels (mobile), enabling the size, layout or use of the rooms in a flat to be modified or a dwelling to be converted into a place of work.

When an element is being constructed, a sufficient margin of space has been left to allow for subsequent development of the element. For instance, a strip of land may be left along a road to allow for later widening or the construction of a road reserved for public transport vehicles.

(b) The "systems" are groups of elements of the same nature which form lines or points and which can be arranged according to certain rules (as distinct from a set of elements distributed at random): for instance, the road system is a network of lines, the system of schools or retail shops forms a network of points. The most typical systems for the proposed organization of the nucleus are as follows:

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The system of buildings, many of which are grouped around open spaces, is practically continuous; only exceptional schemes and certain large public buildings can be isolated from this system. In general the buildings are fairly tall but their height, which is five levels on average, varies considerably and a number of levels are often left vacant for roads, car parks and certain facilities.

The external spaces, which are bounded by buildings, form a continuous system inside the city, thanks to traffic ways which pass through the buildings; these spaces constitute a system which varies both in size (ranging from public parks to courtyards in the centre of groups of buildings) and in setting (vegetation or masonry), depending on the precise purpose allotted to them.

Motor traffic on the whole uses a continuous and regular grid of one-way roads, intersecting at right angles to form a rectangular lattice averaging 420 m x 320 m, but varying according to the type of terrain.

Within each link of this primary grid, a system of secondary roads, designed for slow traffic, leads to the parking areas, buildings and facilities. Certain secondary roads may cross primary roads to provide convenient connections between adjacent links, provided they do not form routes which duplicate the primary roads.

There is a closely-meshed and continuous network of pedestrian ways, which are generally at ground level but also make use of the shelter provided by certain car parks and may cross or be recessed into buildings, especially to allow primary roads to be crossed. This network forms a lively shopping precinct that is ideal for pedestrians. It brings the various amenities, dwelling and work-places into relation with each other. It is easily accessible from the car parks, the public transport stopping-places and the secondary roads, which implies that the latter will frequently be bordered by pavements.

The main amenities are either dispersed, so as to be nearer the various blocks of flats or, more frequently, concentrated in units varying in size, depending on the extent to which they supplement one another. These groups of amenities constitute the strong points of the pedestrian traffic network. They are provided with car parks.

(c) The relations between the systems which form the structure of the town:

Formal relations: e.g., the pattern of tall buildings determines the pattern of open spaces; on the other hand, this pattern of tall buildings is independent of the main motor road network.

Functional relations: e.g., those which ensure that amenities, dwellings and work-places are connected by the main motor roads.

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The most characteristic example of the scheme concerns the pedestrian traffic network, since it serves the amenities, the dwellings and the work-places. It is easily accessible from the car parks and public transport stopping-places, but crosses the fast motor roads without hindrance. It is in visual relationship with the system of built-up areas and with the green areas of the town; it provides a link between the open spaces, being set into or traversing the high buildings.

(d) The "urban tissue"

The rules proposed for organizing the elements into systems should result in a continuous "urban tissue" with the following features:

The urban tissue makes it possible to create a town which is an organized unit, capable of being transformed and extended without losing its coherence.

The urban tissue is not uniform but, on the contrary, infinitely varied. It permits a multitude of combinations, shapes and architectural volumes but still constitutes a coherent whole.

The urban tissue can be adapted to meet the special exigencies of the site which it is to occupy. It is suitable for the vast majority of building schemes foreseeable in a town of average size. However, it would be possible, as an exception, to envisage a programme which included an edifice on a different scale from that of the tissue, which would then have to be interrupted at this point and continued further on.

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The type of organization proposed for the nucleus obeys a number of rules, only the most characteristic of which have been mentioned here, and is now being studied in the light of the technical, economic, administrative and financial possibilities of giving practical effect to it. The basic ground rules of the operation will then become clear and the conditions for actually putting them into effect will be determined after consultation with the builders and the financial authorities. The first slice will thus constitute the town's "architectural charter", which will be tried out under real conditions and be open to a wide range of possible developments.

4. AN "ANTI-NUISANCE" POLICY

In connection with the Vth French National Economic and Social Development Plan (1965-1970), the "Délégation Générale à la Recherche Scientifique et Technique" (DGRST) financed various programmes of research into nuisances: air pollution, water pollution, noise etc.

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In 1968, the DGRST decided that it would be interesting to apply these results globally to a new town. The "Délégation à l'Aménagement du Territoire et à l'Action Régionale" recommended the selection of Vaudreuil, since this new town was situated on the Lower Seine axis, which lies downstream from Paris and is in the process of rapid industrialisation.

The new town of Vaudreuil was therefore chosen by the French Government for a detailed study of all measures capable of maintaining urban nuisances at the lowest possible level. This decision was taken in connection with the "hundred measures for improving the environment" (June 1970).

The aim is not to make Vaudreuil a "pollution-free town". In any case, this definition would have no exact scientific meaning, for it is not possible to conceive of a "natural" environment which is wholly free from nuisances.

The real aims of the operation are of two kinds:

- first, the construction of the new town will provide an opportunity for consolidated thinking on all questions concerning urban nuisances, especially their relationship with the various forms of urbanisation;

- secondly, Vaudreuil will be a "test bench", on which various full-scale practical measures, both technical and legislative, suitable for subsequent general application in France, and even in other countries, can be studied.

The object therefore is to take into account all aspects of the problem, not only the scientific, technical and town-planning factors but also the economic, financial, psychological and sociological ones.

A feasibility study of the possible solutions is essential.

The DGRST operation was transferred to the Ministry for the Protection of Nature and the Environment when this new Ministry was set up.

At international level, this experiment is being carried out in the context of Franco-American scientific co-operation which was initiated by the DGRST and which is being continued by the Ministry of the Environment.

During the first stage four groups of national experts studies, under the auspices of the "Délégation à la Recherche scientifique et technique", problems connected with the site of the new town, its traffic, industry and housing.

The research concerning the preliminary study of the site was particularly thorough and will make it possible by the end of 1972 to arrive at a complete picture of the climate, the

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atmosphere, the vegetation, the state of the waterways, the lakes and the water-table in the Vaudreuil site, before work begins.

The recommendations by the other groups of experts are more general and less precise in character. They mainly amount to guidelines concerning:

- the measurement of noise caused by the various types of vehicles;
- the choice of a transport system affording a continuous and fluid traffic flow;
- the choice of a heating system which will reduce air pollution;
- the planting of protective screens of trees, containing selected varieties, between the industrial zones and the housing or recreation sectors;
- the need to associate the inhabitants with the operation, especially in connection with educational activities.

This first stage did not entirely come up to expectations.

It was found that the association of scientists in the planning of a new town posed difficult problems of organization and working methods.

In a certain sense, it might be said that the problem was one of "language", since the main difficulty consisted in persuading each group of persons concerned to formulate the questions and replies addressed to the other group in a language which could be mutually understood.

The absence of this ability to communicate is a stumbling-block all too frequently encountered by new town planners.

If no way can be found of getting round this problem of communication, the organization set up is supposed to be referred to the Study Mission for review and rethinking.

The new organization is of a purely experimental nature. It includes the following staff attached to the Director of the Study Mission:

- one "environmental cell" consisting of: an "Environment Co-ordinator" capable of answering any questions put by town planners on environmental matters or of putting them in touch with a qualified expert after having first given advice on how to formulate the relevant questions;

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- a "Planning Co-ordinator" capable of answering any questions put by scientists on planning;
- a "Promotor-Supervisor" responsible for defining goals and the means for achieving them and for preparing the annual research programmes and supervising their implementation;
- the appointment of "Scientific Advisors" who would act as co-ordinators and would be responsible for programming the work of the numerous specialised scientific experts.

A large proportion of the posts of "Scientific Advisors" have been earmarked for regional university bodies with the idea of associating them very closely with the operation.

Further an "Innovation-Nuisance Committee" has been set up at national level by the Ministry for the Protection of Nature and the Environment.

Its purpose is to formulate practical proposals and suggest anti-nuisance and anti-pollution measures, to arbitrate, to isolate from the Vaudreuil programme conclusions suitable for general application, and lastly to obtain from the various Ministries concerned the necessary facilities to enable the experiment to be continued and expanded under the most favourable conditions.

When it took over from the DGRST, the Ministry for the Protection of Nature and the Environment arranged in 1972 a research programme which would be in the nature of a prospecting exercise and would be extended to cover the whole Vith plan.

In each field of study, it will be necessary to make a complete analysis of the economic and psycho-sociological data for the various possible solutions. The aim is to determine what measures must be applied, taking full account of all the restrictions which must be imposed upon the inhabitants.

The difficulty is to prepare a programme of action which will satisfy the following three criteria:

- correspond to the best cost/effectiveness ratio from the standpoint of the public authorities, since the financial resources which they can devote to the operation will necessarily be limited and it is important to ensure that the best use is made of them;
- not create psychological or sociological restrictions for the inhabitants of Vaudreuil, who should not be treated as guinea-pigs;

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- not involve financial or economic constraints unacceptable to the factors of production and the families concerned.

The climax of the feasibility study will be the preparation of an operational project for the "nucleus" of the town.

It also includes a study of the observation and checking systems to be created during the subsequent phase.

It will again be possible to distinguish more clearly between responsibility for town planning and responsibility for the study of nuisances. As regards town planning, this will involve the practical application, by the builders, of the anti-pollution measures adopted.

As regards nuisances, it will be necessary to construct on the site a laboratory to serve as a central collecting-point for the scientific data required for the permanent surveillance of the situation on the spot.

The purpose of this laboratory will be to maintain a close watch on the development of the situation at Vaudreuil, not only as regards scientific and technical problems concerning nuisances, but also from the point of view of cost and the psychological reactions of the inhabitants.

The laboratory must collect any relevant data needed for preserving the quality of the urban environment. Finally it will be responsible, with the collaboration of the groups of experts, for initiating a "feed-back" system, if it becomes clear that changes should be made in the basic recommendations, in the characteristics of the new town, or in the treatment system based on a model used in the second phase.

Among the concrete measures or options already envisaged, subject to the conclusions to be drawn from the second phase of the study, mention may be made of the:

- knowledge of the ecology of the site at zero hour, i.e. date on which a start is made on the new town (acquired as a result of studies initiated by the DCRST);
- allowance to be made for building-site problems in the town;
- forming for recreational purposes of artificial lakes formed in sand pits and restoration of the balance of nature;
- noise abatement achieved by architectural and technological devices for which provision is made in the first slice of the town nucleus;

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- planting of a screen of trees to the north of the site as a protection against the prevailing winds;
- landscaping of the industrial complex of Incarville;
- experimental work on the elimination of pollution caused by run-off.

These experimental programmes must be used to promote the constitution of a new community, which is one of the prime motives for creating a new town.

The convergence of these apparently unrelated problems led to a proposal to set up an Environment Centre, a new type of facility which would include the municipal offices, the town planning workshop, the centre for applying anti-pollution techniques to town planning backed up by an anti-pollution science laboratory, a series of exhibition halls, conference rooms and workshops designed to initiate school-children, students and citizens into all the qualitative aspects of urban life.

Because it has been deliberately decided not to treat the future town as a finished object, whose details can be planned thirty years ahead, it is necessary to abandon the conventional type of preliminary study in favour of a much less simple process which deliberately leaves open the possibility of integrating new techniques, problems and objectives as the years go by. The task of the planners becomes more complicated, while the development of methods of study that allow for the unforeseeable in town planning becomes more complex. However, this is the price that operational town planning must pay if it is not to be paralysed by following over-rigid models which are too quickly out-dated by the changing preferences and needs of the inhabitants, and if it is finally to take full and coherent account of all the factors affecting the environment so as to create the setting of tomorrow's urban way of life.

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LES VILLES NOUVELLES EN FRANCE

MAI 1971



REGION PARISIENNE

VILLES NOUVELLES

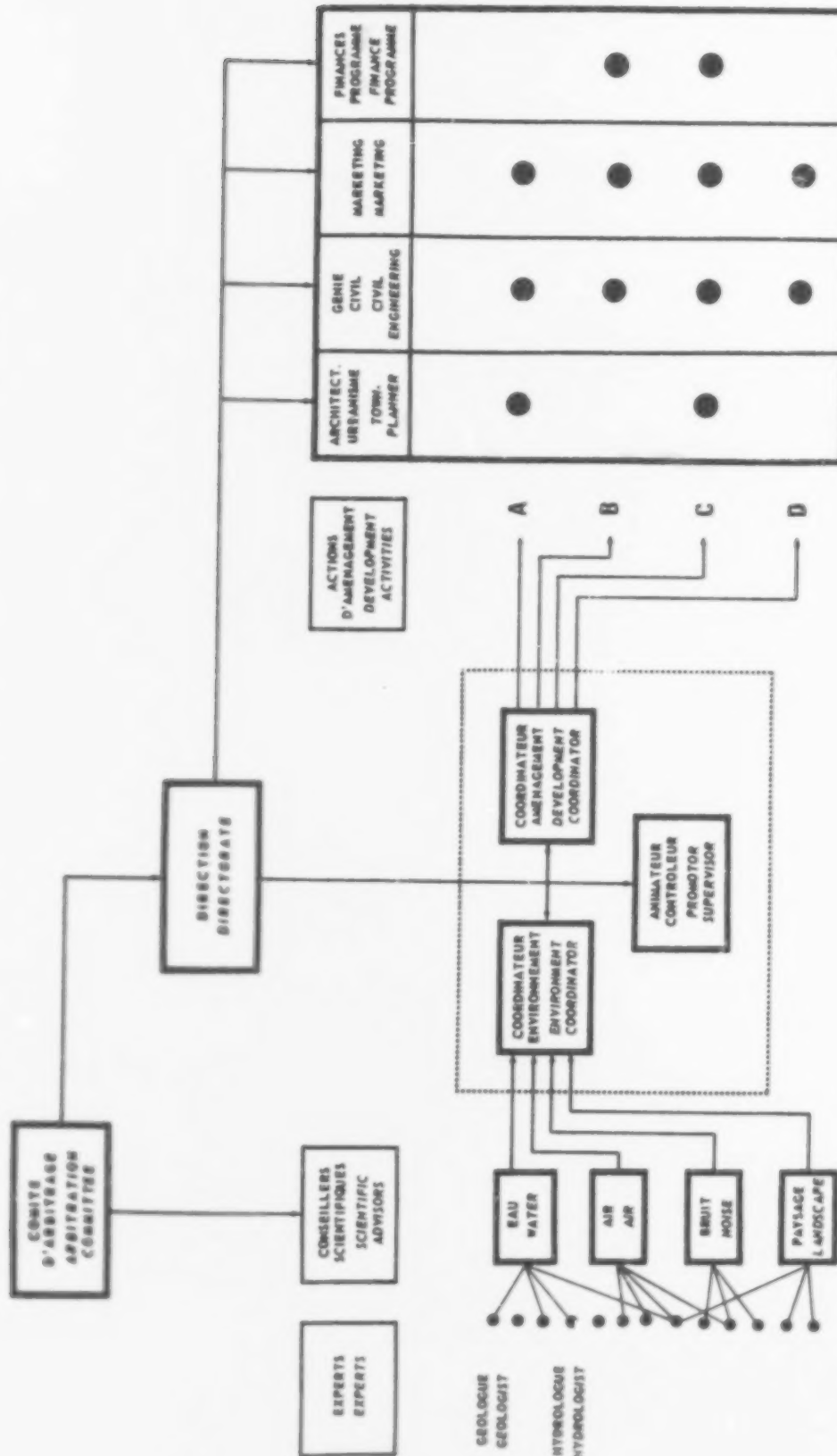
- A - le vaudreuil (près de rouen)
- B - lille - est val de
- C - l'île-d'abau (lyon)
- D - vitrolles (marseille-fos)

VILLES NOUVELLES DE LA REGION PARISIENNE

- 1 - st-quentin-en-yvelines
- 2 - cergy-pontoise
- 3 - marne-la-vallée
- 4 - évy
- 5 - melun : sénart



ESQUISSE D'ORGANISATION DE L'ETUDE MUISANCES
SKELETON CHART OF ORGANIZATION FOR ANTI-MUISANCE RESEARCH



N A T O U N C L A S S I F I E D

1.6.0

PROPOSALS FOR A NATIONAL LAND USE POLICY - UNITED STATES

A large percentage of environmental problems derive from the uses made of the land, the nature, location and intensity of these uses. Basic to an environmental strategy in regional development is a land use policy. First serious attempts at formulating such policy at the national level date back to the thirties. Responsibility for land use policy was largely left to local and state governments, until some issues became of national interest and scope : the disposal of Federal land, the siting of power plants, the development of new towns, the construction of an interstate highway system, the spread of pollution, among others. The paper on National Land Use Policies reviews the efforts made and steps taken in this direction in the United States.

N A T O U N C L A S S I F I E D

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1.6 NATIONAL LAND USE POLICY PROPOSALS

By Mr Harrison Loesch
Assistant Secretary, United States Department of Interior

National Planning Experience

Comprehensive planning for natural resources management on a nationwide basis has never been adequately developed in the United States of America. The Nation has, however, instituted a number of broad based, special-purpose planning efforts, including outdoor recreation planning, a national airport plan, interstate highway system planning, and certain nationwide assessments of timber, energy and water resources.

Even so, since the dissolution of the National Resources Planning Board in 1943, the United States has sustained no overall Federal resource planning effort. As a consequence, the U.S.A. possesses no national plan or policy against which planning for a particular function can be measured and placed in proper perspective.

The Nation recognizes the considerable merit of a comprehensive nationwide planning effort, since it could provide a framework within which the diverse planning efforts could function and an instrument through which the President could exercise policy guidance for all Federal programs affecting use of the Nation's resources.

In the past the U.S.A. has followed what might be called single-purpose planning, with a few regional exceptions. It has planned for housing, for urban renewal, for historic preservation, and for other concerns. The Department of the Interior has accumulated a wealth of nationwide planning experience in the formulation of State by State outdoor recreation plans which comprehensively take into account all of a State's recreation needs, each in relation to needs of the other States.

The need for comprehensive overall planning does not by definition eliminate the need for planning for specific purposes. Planning for coastal areas provides a case in point. Such planning should take place in the context of more comprehensive planning, but so individual, so critical, are coastal area problems that they need special plans of their own. Such single-purpose planning zeroes in on a specific target, in contrast with comprehensive planning. Another example of single-purpose planning is evident in so-called "categorical" financial grants - traditional Federal grants made for specific categories of needs. These contrast with the more comprehensive revenue-sharing grants which are proposed.

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The need for single-purpose action in no way obviates the priority of broad-based planning. This concept has been an evolutionary matter in U.S. governmental approaches. Indeed, only a year ago the Administration was proposing specific programs designed to cope with our estuarine problems.

Today, it still seeks the same objectives but within the framework of a broader planning program. The testimony of the Department of the Interior on two estuarine bills before the Congress on May 5th of this year supplies an example.

The Department was asked to comment on S. 582 and S. 638, both of which would amend the Marine Resources and Engineering Development Act of 1936 by adding a new Title III, the "National Coastal (and Estuarine) Zone Management Act of 1971". These bills would authorize Federal assistance to coastal States in developing management plans and programs, including cost-sharing grants.

Both bills would authorize bond and loan guarantees to facilitate land acquisition, land and water development, and restoration projects within stated limits. One of the measures would provide cost-sharing grants for establishment of not more than 15 estuarine sanctuaries.

Rather than recommend passage of either of the two bills, which the Administration did only a year ago, it now proposes a more comprehensive measure, S. 992, the National Land Use Policy Act. This would encompass the aims of the two single-purpose bills. The new factor in the equation is the belief that the States now are prepared to move toward the objectives set forth in the more comprehensive Act. The Administration now is convinced that from henceforth single-purpose programs affecting use of land must be evaluated and executed with full regard for all environmental requirements.

The National Land Use Policy Act of 1971 will be discussed in detail but it is important to recognize that the institutional mechanisms which it proposes include the concept of protecting coastal zone and estuarine areas of critical environmental concern.

The new Land Use measure would provide Federal grants for program management only when State laws affecting the critical areas take into account the esthetic and ecological values of wetlands for wildlife habitat, food production sources for aquatic life, recreation, sedimentation control and shoreland storm protection. In addition, State laws would have to take cognizance of wetlands' susceptibility to permanent destruction through draining, dredging, and filling, and the need to restrict such activities.

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The measure emphasizes that many threats to coastal areas originate inland where eventual impact on shoreland environments is hard to recognize.

The Department of the Interior's extensive experience in administering a Land and Water Conservation Fund has helped it develop a belief in the effectiveness of State action. The Land and Water Conservation Fund program requires States to prepare comprehensive outdoor recreation plans as a prerequisite to obtaining Federal grants for purchase and development of public recreation areas. The States find that these plans supply criteria for land use decisions affecting recreation matters and guide assignment of State and local money and manpower resources. Importantly, they illustrate the value of broad-based planning. This helps demonstrate the need for such planning for all related resources. From somewhat meager and rather tentative origins barely half-dozen years ago, the Bureau of Outdoor Recreation of the Department of the Interior has watched and helped these plans mature into effective and respective documents, highly useful tools. The Department anticipates no less from State plans prepared pursuant to the proposed National Land Use Policy Act of 1971.

An even clearer example of the single-purpose versus the comprehensive approach to planning in consonance with overall environmental needs exists in the proposed Power Plant Siting Act of 1971. This measure seeks to protect environmental values while facilitating construction of needed electric power supply facilities. The dichotomy between electric power facilities and natural resources is well known. The Nation demands electric power. Its economy is geared to it. Power shortages are increasing in frequency. Yet fragmented planning haunts the Nation; it has no framework within which to make a considered national commitment to devoting some stipulated portion of natural assets to production of electric power. Rather, Americans voice concern over the deleterious effects of power production. Often our citizens oppose hydroelectric facilities because the dams destroy natural areas and back impoundments across fertile acres. The Nation hesitates to sanction steam-powered plants because the coal used for fuel pollutes our air. It sometimes denigrates nuclear-fueled electric power plants because it fears thermal discharges, because of the visual blight of sky-high cooling towers, and because it is uncertain that the installations are safe.

Yet Americans want electric power. They feel they must have it and are not prepared to do without it. As a people, America won't turn off machines and lights. The sensible procedure is to delegate the portion of natural resources which will be damaged least to production of power.

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The machinery for doing this, for accommodating the necessary trade-off of natural assets, is embodied in the Power Plant Siting Act of 1971. In contrast for the most part with the provisions of the Land Use Policy Act, the Power Plant Siting measure responds to a need for single-purpose planning and an understanding that the planning must be undertaken on the basis of sound ecological principles.

The environmental philosophy implicit in the proposed National Land Use Planning Act, even though the measure is not yet passed by the Congress, is already having an effect on related Federal proposals. The Administration in July 1971, submitted legislation stating a national policy governing use and management of 450 million acres of Public Domain and providing specific guidelines for the management of those lands. The measure provides that the largest category of Federal lands will be managed under the same philosophical concepts which the States are urged to follow in the National Land Use Planning proposal.

The Federal Government is the largest landowner in the United States. That it has engaged in de facto land use planning for many years is evident in the setting aside for public purposes of more than 180 million acres in National Parks, Forests and Wildlife Refuges. The new Administration proposal declares that the Public Domain, henceforth to be known as the National Resource Lands, would be managed under the principles of multiple use and sustained yield in a manner which will use all practicable means and measures to protect the quality of the environment. The bill declares a national interest in keeping the land in Federal ownership, although it provides for disposal when important public objectives would be served.

The Federal Government at one time owned 80 per cent of what is now the United States. Some 1.1 billion acres of this were transferred to the States and their citizens, most of it in the American West. Much of this went to help develop railroads, schools, and homesteads, some was prescribed for National Parks, Forests, Wildlife Refuges and other Federal public purposes.

The 450 million remaining acres of Federal public lands are without specific statutory designation. Much of the area is in Alaska. The Department of the Interior's Bureau of Land Management, successor to the General Land Office, is the administrator. That agency manages all the unreserved public land, is responsible for administration of mineral laws on all public lands, and exercises a number of other responsibilities under more than 3,000 land laws enacted during the past 170 years.

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In 1964 the Congress passed three laws which to a degree anticipated the National Land Use Policy Act as well as the new National Resource Lands measure. It established a Public Land Law Review Commission to review the Nation's land laws and administrative practices and to supply needed modifications to enable the public lands to be put to their most beneficial use. A Classification and Multiple Use Act authorized classification of the public lands for disposal or retention for multiple use management. A Public Land Sale Act allowed disposal of public lands chiefly valuable for certain specified uses. The latter two acts, pending development of Public Land Law Review Commission recommendations were interim measures. During the six year life of the Classification and Multiple Use Act, 177 million acres were classified for multiple use management and 3.5 million acres for disposal. The remaining 262 million unclassified acres are almost all in Alaska.

The comprehensive management authority called for in the proposed National Resource Lands measure accords with many Public Land Law Review Commission recommendations and continues on a permanent basis the concepts approved by the Congress in the two recently expired Acts. For the first time, this would provide a clear, comprehensive definition of the Department of the Interior's mission with respect to the lands in the public domain. The bill also is designed to provide a broad framework within which needed additional legislative proposals could be accommodated.

The measure directs that an inventory be taken of the national resource lands. It provides for development of comprehensive land use plans for those lands, with priority for critical environment areas including flood plains, coastal zones, and scenic or historic areas. Priority also would go to inventoring critical resources, such as clean-burning fossil fuels needed to assist in the Nation's pollution control efforts.

The Proposed National Land Use Policy Act of 1971

The proposed National Land Use Policy Act would authorize the Secretary of the Interior to make grants to encourage and assist the States in preparing and putting into effect land use programs. These would be designed to protect areas of critical environmental concern and to control and direct growth and development of areas of more than local significance, among other purposes.

The measure encourages the States to exercise fully their responsibility for dealing with critical land use problems of more than local impact. It finds present State and local institutional arrangements for this purpose inadequate.

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These shortcomings lead to irretrievable damage or loss of important ecological, cultural, historic, and esthetic values essential to the well-being of all citizens. They result in ill-planned development of coastal zones, as has been suggested. They induce disorderly development and urbanization as major airports, highway interchanges, and recreational facilities are installed. Likewise, they hinder adoption of standards to control air, water, noise and other pollution. Selection and development of sites needed for essential private development of regional benefit is delayed or prevented. Usefulness of Federal and federally assisted projects and administration of Federal programs is impaired and large-scale developments which still thrive under existing procedures continue to create significant adverse impacts upon the environment.

The National Land Use Policy Act of 1971 finds and declares a national interest in encouraging full State exercise of planning and regulation authority in cooperation with local governments. Under the proposal, Federal grants of up to 50 per cent of cost would be made to help develop State land use programs.

Once the plans were made, annual grants of up to 50 percent of the cost to States of managing their land use programs would be available. Such grants would be made when State programs met criteria specified by the Secretary of the Interior. The criteria would include: a method for inventoring, designating, and exercising State control over areas of critical environmental concern and areas impacted by key facilities; a method of assuring that local regulations did not restrict land use and private development of regional benefit; a policy for influencing the location of new communities; a method for controlling the use of land around new communities; a method for controlling proposed large-scale development of more than local impact on the environment; and a detailed schedule for putting all aspects of the program into effect.

In addition, the program could not exclude areas of critical environmental concern to the Nation. It would have to take into account the unique values and fragile nature of coastal zones and estuaries, particularly coastal wetlands.

Requirements for receiving Federal grants would include establishing State procedures for disseminating information and notice of public hearings on the program, and coordinating with neighboring States, Federal agencies, and other local governments.

States could use any one or a combination of techniques to put into effect the essential elements of the land use plan enumerated above. They could establish criteria and standards of local implementation and compliance which would be subject to judicial review and enforcement. The States themselves could do the land use planning for all levels within the State. They could review all land use plans and regulations prepared by political subdivisions. This technique would require vesting full powers and authority for approval or disapproval in the State.

Under any of the techniques, States would be required to forestall action contrary to their land use program purposes. Adequacy of State laws, regulations, and criteria for this purpose would require careful review. In the event there were no applicable laws or regulations, State legislation would be required.

The proposed legislation would require that Federal agencies relate their proposals to State land use plans determined eligible for management grants. Public hearing procedures would be invoked when proposed Federal actions would significantly affect the use of non-Federal lands in an area where a State had not yet prepared a land use plan.

The measure would grant the Secretary of the Interior full authority to provide advice to the States upon request about areas of critical environmental concern. It would direct Federal agencies to render assistance and to share expertise with the States.

Federal grants under the program would be allocated to the States on the basis of population, growth, and the nature and extent of areas of critical environmental concern, among other relevant factors.

Innovative Approaches in the National Land Use Policy Act of 1971

The proposal of President Nixon's Administration for a National Land Use Policy Act derives from a belief that most of our Nation's environmental ailments are the result, not of evil men scheming to destroy the country, but simply a lack of foresight, planning, and coordination in activities affecting the environment.

Americans make a habit of attacking problems by breaking them down into narrow areas of specialization. This is effective if you are mass producing motor cars or television sets. It has obvious shortcomings when it blinds a people to the environmental consequences of their acts. Often single-purpose programs stand at cross purposes with one another and with the environment.

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The proposed National Land Use Policy Act is grounded in a painful lesson Americans have had to learn: the environment cannot be dealt with piece-meal. Natural systems are totally interdependent. John Muir, the great naturalist, observed of nature: "When we try to pick out anything by itself, we find it hitched to everything in the universe". The Land Use Policy proposal contains machinery designed to reverse many patterns of land use which have led to numerous environmental shortcomings. It seeks nothing less than a reshaping of attitudes and institutions governing land use in this country, attitudes rooted archaically in frontier experience when land was regarded as inexhaustible. The proposal manifests a new ethic of respect for all of nature, a mandatory certainty that the environment can be approached successfully only as a whole system, rather than as isolated fragments.

Neither this legislative proposal nor any other single measure will restructure basic attitudes and traditional institutions overnight. Time, and concerted effort by all sectors of society, will be required. A first foundation already has been laid in the highly imaginative National Environmental Policy Act which President Nixon signed as his first official act of the Decade of the Nineteen Seventies. That measure declares it a national policy for Federal agencies to give full consideration to environmental consequences before proceeding with any undertaking, be it project, loan, grant, permit or regulation.

With that new perspective, a National Land Use Policy becomes a next logical step. The proposed Land Use Policy measure at one and the same time respects existing institutions and offers new approaches to our complex problems. The provisions requiring establishment of State land use planning agencies with authority to control certain types of land use and for coordination of a State's plan with those of other States, Federal agencies and other interested parties are in the best tradition of John Muir's perceptive recognition that in nature everything is hitched to everything else. The same can be said of the requirement that Federal and federally supported activities conform generally to State approved plans or, in their absence, to statutory criteria for such plans. This provision underscores the National Environmental Policy Act.

A major premise of the proposed National Land Use Policy Act is that the principal obstacle to environmentally sound land use is not lack of good land use plans or architectural models of excellence, but rather lack of governmental institutions capable of putting plans into effect.

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When zoning was accepted in the 1920's as a legitimate exercise of State police power, State legislatures quickly and willingly delegated to local governments the authority to pass zoning ordinances. Zoning has proven an effective tool in dealing with many purely local land use problems. But when land use issues spill over jurisdictional boundaries or involve values of statewide concern, it has often proven a hindrance. Where proposed development projects will increase local tax revenues and provide new jobs, it has been extremely difficult for local jurisdictions to take into account non-economic values, such as those affecting environmental quality. Such value judgements normally are not reflected in public policy decisions unless made at a level where countervailing interests of larger regions override local economic pressures.

The National Land Use Policy Act proposal concentrates on the need for institutional reform to meet situations of the sort just described. The measure does this without repudiating existing State land use control mechanisms. It recognizes that most land use decisions are of purely local interest and should be made at the local level. The Land Use Policy proposal requires States seeking grants to regulate only decisions of more than local importance. This would concentrate State and Federal resources on the most critical problems and minimize involvement of the States in the affairs of their political subdivisions.

Within the Department of the Interior, authority for administration of the Land Use Policy Act would be delegated to an Assistant Secretary for Programs and Planning. This policy official would direct an Office of Regional Planning whose primary function would include river basin and economic development planning and administration of the National Land Use Policy Act of 1971 and the Power Plant Siting Act of 1971.

President Nixon's Administration stands convinced that economic growth and prosperity can continue in this country without sacrificing the environment or the quality of life. It will take major efforts, but unless activities are related to the integrity of natural systems, Americans and all other peoples may themselves become an endangered species. The Administration's National Land Use Policy Act of 1971 seeks to place land use planning on an environmentally sound basis. It endeavors to coordinate activities which threaten to misuse essential resources. Its enactment into law is certainly of the highest priority. It represents the United States' most sophisticated, most advanced, venture into environmental planning to date.

N A T O U N C L A S S I F I E D

1.7.0

SCENIC EASEMENTS CONSIDERED AS A MEANS OF PROTECTING THE
ENVIRONMENT (UNITED STATES)

The use of scenic easements in the implementation of regional environmental protection policies was discussed at the CCMS meeting at Arc-et-Senans, France, in April 1971. A scenic easement is an interest in a parcel of land acquired by a public agency through purchase, donation or regulation, and limiting the development rights of the owner, in order to preserve the natural quality of the parcel while remaining in private ownership. A report on the subject was prepared by Mr. Harrison Loesch, Assistant Secretary of the Interior..

The United States considers scenic easement an important tool for environmental protection, and this report is submitted as part of its contribution.

N A T O U N C L A S S I F I E D

1.7.0

1.7.1

1.7 SCENIC EASEMENTS

A TOOL FOR ENVIRONMENTAL PROTECTION

By Mr Harrison Loesch
Assistant Secretary, United States Department of Interior

Introduction

During the past decade land values have been soaring in practically all parts of the United States. At the same time, lands are being intensively used or developed where only a few years ago little or no utilization was under serious consideration. These development pressures and associated increased procurement costs, coupled with sizeable acquisition programs for recreational, conservation and scenic preservation, have generated increased local concern over removal of lands from tax rolls. Such actions place a heavy tax burden on the remaining landowners in the area.

In an effort to (1) reduce overall acquisition costs, (2) prevent scenically nonconforming or objectionable types of development, and (3) retain lands on tax rolls where full ownership by a local, State or Federal governmental agency is not a necessity, planners and legislators increasingly in recent years have urged the use of scenic easements. In proper circumstances, such a compromise may be mutually beneficial to the acquiring governmental agency, the landowner, and the local community.

The scenic easement, however, is only one of a number of less-than-fee-title devices available to the administrator to obtain rights in property. A key selling point for all such devices is the flexibility which may be achieved by simply varying their terms to fit the special requirements of the governmental agency and the landowner in question. Obviously, the freedom to tailor the contract helps insure receptivity by landowners and results in much wider participation. However, flexibility and resulting diversity may make administration and management costly and difficult.

Examples of some of the standard less-than-fee-title devices most often used are:

1. Saleback - The full fee simple title is purchased or condemned, and then the land is resold by a quitclaim deed. The deed reserves those interests desired, such as the retention of woodlands, absence of billboards, etc.

1.7.2

2. Leaseback - The full title is purchased or condemned, and then the land is leased, usually for a long term, consistent with the use desired. The lease is subject to the desired restrictions.

3. License - The right to enter for specified purposes is purchased. The purposes may include hunting, wildlife observation, hiking or camping, among others. The landowner never conveys title. A subsequent sale of the land may extinguish the license, depending on terms of the sale.

4. Development Rights - The right to convert the land to more intensive use is purchased. As a practical matter this technique is limited to rural areas because at the urban fringe, development rights are apt to have a value equal to that of the full title.

5. Restrictive Covenant - An agreement generally detailed in the deed, restricting the use to which land may be put. The agreement is drawn so that the covenants run with the land, i.e., are binding on all future purchasers with notice of the agreement.

6. Easements - An actual interest in the land or partnership is purchased. The rights desired are obtained by another party through grant of easement and conveyance by deed. Recording the deed binds all future grantees. The parties involved are limited in their use of the property by the rights that they own.

The Easement Concept

An Easement is always distinct from the occupation and enjoyment of the land itself. It does not transfer title to the land, although it is created by a deed. It does not constitute a lien against the property. Basically, it is simply a right to use another man's property for some specified purpose; e.g., right-of-way easements, or to prevent him from using his own property in some specified manner.

The owner of land subject to an easement has all the rights and benefits of ownership consistent with the enjoyment of the easement. The easement does not transfer any title to the land nor work any dispossession of the owner. Easements are binding on all future grantees of the land who have notice of the encumbrance. After the easement is appropriately recorded, any purchaser is deemed to have constructive notice of the restriction and takes the property subject to the easement.

1.7.3

Generally, easements are divided into two types, affirmative and negative. An affirmative easement is a limited right to make use of land owned in fee by someone else: a right-of-way easement is a good example. A negative easement is a right to prevent a property owner from using his land in specified ways. Some examples of affirmative easements are:

1. Hunting and fishing rights - This type of easement provides a limited right for the public to use privately owned land for hunting, fishing, hiking or camping.

2. Highway easements - This kind of easement may be obtained as an alternative to condemning the land in fee title for public purposes.

3. Flowage easements - This type conveys the right to flood privately owned land, either temporarily or permanently.

4. Aviation corridor easements, plus trajectory and electronic easements.

5. Conservation easements - These include hunting rights, right to enter and manage waters, right of access to lakes, right to insist that cover and other habitat remain undisturbed (a negative right), right to fish from private land, etc.

There are many kinds of negative easements too; several examples are:

1. Easement against development - This provides the right to prevent developments in flood plains or to protect wetlands from drainage and agricultural use, among others.

2. Clearance easements - These are the so-called obstruction restrictions, including height limits, usually found around airports.

3. Scenic easements - These, in effect, are the purchase of views. The terms of the grants vary, but in general the purpose is to prohibit any activity by a landowner which will interfere with scenery. The prohibited activities might include dumping trash, cutting woodlands, erecting billboards, etc.

Often the grant of negative rights is accompanied by an affirmative right of entry to inspect, to trim trees or to remove violating materials or structures.

1.7.4

Uses of Scenic Easements

The preservation of extensive open space through public purchase of scenic easements is relatively new. Public acquisition of easement interests for rights-of-way and for drainage ways has a long history, but this is not true of open space or scenic easements over extensive areas.

Purchase of scenic easements requires full exploration of the uses, present and future, of the property to be acquired. Scenic easement acquisition is not satisfactory if facilities or structures are to be placed upon the land, or where heavy public use will occur. However, some inholdings, both inside and near park boundaries, may be covered by scenic easements so that their use conforms to the overall objectives of the park area. Some of the most successful scenic easement programs in this country preserve scenic areas along highways. In such instances the right of public access is not required or obtained.

Whether scenic easements are used in conjunction with park areas or a highway corridor, the basic principles of sound comprehensive planning apply. It is essential that lands and potential uses of these lands be identified in a plan for the area. The plan should list areas of public use or those where fee simple title acquisition will be necessary, as well as those where some mechanism to acquire less-than-fee-title, in this case the scenic easement, could be used to protect the areas in question. The decision on how much acreage to acquire varies with individual cases. The general rule in scenic easement acquisition centers around line-of-sight considerations. A person walking through a park or travelling a highway finds the experience affected by what he can see. Variations in vegetative patterns, topography and speed of passing automobiles are additional factors to consider when planning scenic easements purchases.

Easement Documents

Since one of the chief advantages of easement purchase is flexibility, there is no one standard form. The agreements are tailored to the needs of the landowner and the particular landscape qualities desired to be preserved. In general, scenic easement forms include the following:

1. A general prohibition against doing anything inconsistent with either the maintenance of the scenic potential of the property or with allowing the holder of the easement to use the property in a specified way.

2. A restriction against new buildings and structures or major alterations of existing ones. A saving clause permits the continuance of nonconforming uses existing at the time the easement is acquired.
3. An authorization for necessary public utility lines and roads.
4. A prohibition against cutting mature trees and shrubs, but with a provision authorizing normal maintenance.
5. A prohibition against dumping.
6. A prohibition against outdoor advertising, except for activities located on the premises.
7. A statement providing for, restricting, or prohibiting public right of entry in the particular easement.

As additional guidance in preparing a scenic easement document, the following should be considered.

First - Consider and delineate the qualities which create beauty, or which can be developed or altered to create beauty. Draft terms and conditions of the easement so that it will preserve and promote this beauty.

Second - Include in the easement those rights which may be necessary to enable future restoration of desirable qualities, or for the elimination or screening of undesirable qualities which may be present, or which may creep in at some future time.

Third - Apply the terms and conditions to the total scene or to that part of the scenic area which will effectively control the entire view.

Advantages of Scenic Easements

The use of scenic easements in furthering recreation and related environmental planning goals and objectives has a number of advantages. These include reduced initial cost, retention of existing land use patterns, and reduction of the burden on the local tax base. Many landowners are more receptive to granting scenic easements than to other devices for conveying less than full title.

Cost - Acquisition costs for scenic easements vary immensely. Some are donated to administering agencies. The cost of some approach the cost of full title acquisition.

In general, the cost is dependent on the rights conveyed to the administering agency; the greater the control over the transferred property and its use, the closer the easement acquisition cost comes to the full value of the property.

In the State of Wisconsin, where easements are used to preserve scenic values adjacent to the Great River Road, costs paid to owners have averaged about \$20 per acre. Studies by the State indicate that this ranges between 10 and 15 percent of the full value of the land in question.

Recently the National Park Service has acquired scenic easement along the Ozark National Scenic Riverway for values ranging from \$15 per acre to \$2,000 per acre. Full title acquisitions in the same area have ranged from as low as \$38 per acre to a high of \$9,750 per acre.

Land Use Patterns - One of the key selling points for scenic easements is that they keep existing land-use patterns intact, in most instances. This is particularly true in rural areas where agricultural uses predominate. The landowner is allowed to continue using his land in the same way he has in the past. The major right the landowner has conveyed is his right to develop the land for more intensive uses.

Tax Considerations - A major objection of communities to the acquisition of land by governmental agencies is the reduction of the amount of land that can be taxed to support local governmental activities. This objection diminishes somewhat when scenic easements are used, since the land remains taxable at a rate applicable to the existing land use. However, the potential increase in tax rate brought about by changing to more intensive land use is no longer available to the local community. Even so, this is more favorable to local governments than fee simple title purchases for public recreational purposes, since all taxable interest in the property is foregone in such instance.

Occasionally landowners who are willing to keep their land in existing uses, as contrasted with more intensive development, are beginning to receive encouragement from taxing authorities. This takes the form of reduced tax base on property and in the form of the allowance of tax deductions in instances where scenic easements are donated to a public agency. Property owners may find it to their advantage and of mutual protection if they join in placing of restrictions on their properties to preserve the scenic character of the neighborhoods in which they live.

Landowner Receptivity - Taking private lands for public purposes invariably brings protests from affected landowners. The scenic easement provides an effective compromise in many cases. Landowners retain the land and may utilize it in ways compatible with the easement restrictions. Many owners feel this compromise is better than selling full title to their property. On the other hand, some landowners take the position that governmental agencies should acquire their lands outright, paying them full value, or leave them alone entirely.

Problems Involving Easements

Balanced against the advantages of the scenic easement are several drawbacks. These vary in significance. Many have been encountered in the application and management of scenic easement programs.

Easement Enforcement - Perhaps the most important of these problems relates to the enforcement of the restriction provisions of the easement. Because the owner remains in possession of the property and continues to exercise most of the privileges of ownership, he tends to feel that he is entitled to do as he wishes with the land. This attitude becomes further complicated as lands change hands and the new owner tends to forget that a given parcel is burdened with a scenic easement. Development of this potential problem can be partially avoided by the maintenance of a vigorous inspection program and through a continuous educational campaign focusing on the landowners as well as the community.

Appraisal of Easements - Another problem encountered in the use of scenic easements is related to the determination of the value of the rights conveyed. All too often, the value of an easement has been determined by what the landowner is willing to accept for the conveyed rights rather than by a systematic evaluation of the rights included in the easement and their subsequent effect on the property value. This has resulted in extremely divergent values for easements granted by adjacent landowners for similar properties. This problem is alleviated by the improvement of appraisal techniques used in the acquisition of scenic easements.

These problems, although some of the major ones encountered, are not the only ones associated with scenic easements. Most problems, however, evolve from the lack of understanding of the scenic easement concept by both the landowner and the governmental agencies administering and implementing such a program. As greater experience is gained and the use of scenic easements is increased, these problems are expected to dwindle.

1.7.8

Summary

Scenic easements, coupled with full title acquisitions and zoning regulations, can in many instances accomplish the goals of scenic preservation, park acquisition, historic preservation or other conservation programs. Easements are flexible and can be tailored to fit the needs of both the landowner and purchasing agency. In applying a scenic easement program the following criteria may be useful in determining the suitability of the scenic easement or other less-than-full title approach.

1. The scenic easement costs and associated administrative cost should be less than 75 percent of the fee title value of the property.
2. The lands involved should not be needed for heavy public use. Preferably, there should be no structures on them. Frequent access should not be a requirement.
3. Scenic easement acquisitions should convey to the government the necessary interests for insuring compliance with the planned purposes of the acquisition with a minimum of enforcement problems.
4. Easement acquisitions should leave the owner rights of practical value.
5. Easement acquisitions require the equivalent in planning and justification used in purchasing the full title.
6. Social effects, such as local taxation, continued local ownership, and public acceptance, should be favorable for easement acquisitions.

N A T O U N C L A S S I F I E D

1.8.0

NEW INSTITUTIONS FOR NATURAL PARKS : REGIONAL NATURAL PARKS
(FRANCE)

The very small size of local communities in France (38,000 communes) is not suitable for the conservation and planning of large expanses of countryside. France has therefore been obliged to create new institutions, which have no wish whatsoever to supplant existing local authorities. Consequently, it has been decided to implement a policy for the establishment of regional natural parks, which are quite a new departure; an ordinance of 1st March, 1967, ratified their creation without however, establishing any new legislation.

The regional natural parks created for this purpose in notable settings, rich in art and history, but also in inhabited areas open to development, are privileged areas, both for the protection of the national heritage and for the development of rural areas. The three main objectives are to provide the large cities with natural open spaces for relaxation, to revitalise the countryside and, finally, to protect flora, fauna and natural sites, while catering for their development.

The task of creating the parks is entrusted to the local authorities customarily responsible for the regions in question (communes, departments and large neighbouring towns); as they appear, ad hoc institutions grow up around them. The parks, which are administered by the local communities, are largely the outcome of efforts by the town and country folk residing in the area and are created, not in the context of any specific decree, but by virtue of those citizens' spontaneous adherence to the "Constitutive Park Charter" : this Charter lays down a work programme and also measures for the necessary site protection; it provides a basis for the agreement to be concluded between the State, the local authorities concerned and the park users.

N A T O U N C L A S S I F I E D

1.8.0

1.8 NEW INSTITUTIONS FOR NATURAL PARKS : REGIONAL PARKS IN FRANCE

par Mlle C. Delettrez, Chargé de mission, Ministère chargé de la Protection et de l'Environnement - Service de l'Environnement Rural et Urbain

I. HOW REGIONAL NATURAL PARKS WERE CREATED

A problem that is frequently met with nowadays is that of reconciling a development policy with a site conservation policy designed to safeguard the environment while allowing the traditional local authorities, which have close ties with their inhabitants, to continue administering their own regions despite the allocation of certain responsibilities to ad hoc bodies suitable equipped to tackle new problems.

Regional natural parks in France, despite their recent origin (1967) and their limited area (3% of the national territory, situated exclusively in rural settings), constitute a fresh approach for the rural areas which has already aroused some interest at the international level.

One of the most meaningful features of the regional natural parks in France is that the land they comprise (from a few tens of thousands to several hundred thousands of hectares) has no distinct legal characteristics; there is no visible legal boundary between the parks and the country's "normal" or "common" land. On the contrary, an effort has been made to apply legislation and regulations which are in force in adjoining areas. It was considered vital to avoid any form of legal segregation which, through the years, could have resulted in these parks turning into "reserves", enjoying a special status in the nation, and cut off from any changes or development. The main point about the French regional parks is that they reflect a good deal of thinking about the future of the nation's landscapes and a greater regard for existing national provisions which enable local communities, in collaboration with a specialised body largely under their supervision, to preserve landscape quality in both the material and the cultural senses.

Compared with other West European countries, France has a relatively low population density and adequate open spaces of good quality, which are sustained by a dynamic agriculture and a deep-rooted cultural tradition; consequently, until recently, there was no note of urgency in the movement to protect the French countryside. By contrast, other European countries, with less available open space or denser populations, have been evolving protective legislation since the beginning of this century.

Now, however, the most beautiful areas of France are fighting an uphill struggle against the uncontrolled proliferation of private dwellings; certain human activities and some animal and vegetable species are threatened with extinction, and the town dwellers' needs for relaxation are being felt in no uncertain terms.

It is time to face up to the problem of the future development of rural landscapes which we describe as "natural" - although this is a highly relative term, for the French countryside, even in mountain regions, is largely the by-product of a long-standing agricultural system and rural society.

It has therefore been felt necessary to promote a policy designed to protect and exploit natural wealth, by establishing "national parks" and "regional natural parks".

National parks

1. This policy was initiated in France ten years ago with the Act of 22nd July, 1960 on national parks; these were created to protect the nation's living heritage as well as outstanding regions. There are now four such parks (la Vanoise, the Pyrénées, Port-Cros and the Cévennes).

The national parks are extensive and largely "wild" areas, where human activity can be confined, without any great harm, to the traditional forms of agriculture. They have been set up as "natural sanctuaries", and are limited in number because of their special features.

The creation of regional parks

However, there are numerous regions in France which have preserved intimate traces of successive civilisations. Such regions are highly attractive from both the cultural and leisure standpoints by virtue of their natural or architectural beauty, their styles of houses, their expanse and, frequently, their close proximity to a large town.

There was therefore a need for a broader solution more consonant with man's continuing presence, whereby flora and fauna would be protected and the natural setting would be preserved, not so much for scientific reasons as for their environmental value. This solution should enable these regions to be both safeguarded and developed: it would have been unthinkable and dangerous to destroy their development potential, or even totally neglect them for they may well account for as much as one third of the country.

Consequently, it was decided to formulate, and subsequently to implement, a policy for the establishment of particularly original regional natural parks: an ordinance of 1st March, 1967, ratified their creation without, however, establishing any new legislation.

The parks created for this purpose in notable settings, rich in art and history, are also privileged areas for the protection of the natural heritage and the development of rural areas.

The task of creating the parks is entrusted to the local authorities customarily responsible for the regions in question (communes, departments and large neighbouring towns); as they appear, ad hoc institutions grow up around them. The parks, which are administered by the local communities, are essentially the outcome of efforts by the town and country folk residing in the area and are created not in the context of any specific decree but by virtue of those citizens' spontaneous adherence to the "Constitutive Park Charter".

This Charter lays down a work programme and also measures for the necessary site protection; it broadly defines the action to be taken and provides a basis for the agreement to be concluded to this end between the State, the local authorities, local inhabitants and the park users.

Clearly, the designation "regional natural park" which is applicable once the "Constitutive Charter" has been submitted, does not transform a given area overnight. As in the case of a national park, it takes a number of years before the various development and protection programmes can take full effect.

I. The three objectives of regional natural parks

This new approach to parks took shape during the National Conference (Journées Nationales d'Etude) on regional natural parks, held at the end of September, 1966 in Provence. Over 100 persons representing highly diverse backgrounds and areas of specialisation exchanged views on their experiences. Architects, geographers, naturalists, sociologists, museologists and high-ranking officials from eight Ministries gave details of the new ideas to be incorporated into the French approach and indicated their main objectives.

(1) Parks for the large cities

The first objective - to provide the large cities with natural open spaces for relaxation - needs no comment.

Weekend migrations of city dwellers - a fully understandable self-defence reaction by the human organism - have become a vital factor for mental stability, especially in the case of dwellers in large towns. Vegetation and space are as necessary for living as air and water. Even new orientations in town and country planning and efforts to introduce more natural touches in the towns cannot alter this basic fact; in addition to weekend dwellings there is a need for extensive, protected open spaces which are accessible to everybody and as "unartificial" as possible.

(2) Revitalisation of the countryside

The second objective is almost as evident as the first.

Currently, in Western Europe, France is prominent for its large-scale rural depopulation, whereas other countries, such as Great Britain, experienced their revolutions in the 18th century. Given the present economic situation, these

large migrations are doubtless inevitable. However, in certain areas, there is a limit which cannot be exceeded without serious consequences; beyond this limit no economy whatsoever can be viable - even the tourist trade - and the land previously cultivated and worked by man, far from going "back to Nature", as might be expected, gradually turns into a semi-waste.

Clearly, the creation of a natural park is not invariably the best solution for all declining agricultural areas. Nevertheless, this formula can open up a future for certain mountain regions, marshlands and moorlands, especially in cases where the reorientation of agriculture - or even reconversion - is feasible. Very often, the areas most affected are among the most beautiful and the most conducive to cultural and tourist development because of their abundance of historic, prehistoric, artistic or natural resources. These areas are slowly declining, although they possess riches which could bring them prosperity; however, these resources cannot be exploited by traditional rural communities alone.

The real need is for town and country planning on a nation-wide scale, town planning being no longer conceivable unless the neighbouring countryside is simultaneously taken into account. It was therefore appropriate to take advantage of the allied needs of town and country dwellers to inject new life into certain parts of the French countryside and help them to decide on their task (agriculture, tourism, etc) and to adapt themselves to it, bearing in mind the changes being introduced in agriculture and the vital rôle of the countryside as a complement to city life.

(3) Nature conservation

The third objective - nature conservation - is not the least important. Article 1 of the relevant ordinance of 1967 states: "All or part of one or more communes may be designated as a "regional natural park", where the land concerned possesses natural and cultural amenities of such a high standard that it is of special value for man's relaxation and rest and for the tourist trade and requires protection and development".

Thus, while nature conservation is by no means the sole objective of regional natural parks, it is the basic aim. What prospect is there of rest, relaxation, recuperation and recreation in noisy natural surroundings that have been ravaged, destroyed or disfigured? How can anyone live in a polluted park area? For people do live in the parks; indeed, many have lived there. Today they are inhabited by farmers, whose ancestors (the peasants of bygone days) have shaped the landscape for thousands of years without giving the matter much thought. Today, the 60% or 70% of the population who now live in large towns come to these areas, either to enjoy a better way of life, or to reside there part of the time. Many of them still have ties in the country and the rest secretly yearn for the open spaces.

Consequently, nature conservation is a vital activity.

- Nature conservation in a regional park means designating appropriate areas as botanical or zoological "natural reserves", and indicating whether they can be used for hunting or fishing. However, it also entails cultivating the land, planting trees and making careful use of modern biological or chemical crop protection techniques.
- It also means combating pollution and noise, refuse dumping and anything that disfigures the countryside, as well as conducting an active educational campaign.

In this respect, the parks themselves will clearly serve first and foremost as permanent nature observation centres. We have forgotten to look about us: we must relearn the art of observing, not merely the natural sciences at work, but also the wealth of history and prehistory and the achievements of architecture and craftsmen.

II. THE NON-INSTITUTIONAL ASPECTS OF REGIONAL NATURAL PARKS

It is still too early to assess the material impact of this important undertaking which, for the past six years in some cases, and more often over the last three years, has involved 16 regions and 32 departments across France. 18 regional natural parks have either been created or are being planned(1). A number of characteristic features have begun to emerge: the restoration of museums of local arts and revival of popular traditions in typical rural dwellings; the establishment of small cultural centres linked with tourist information centres; the demarcation of routes for nature walks, riding and skiing; hostels for hikers especially in foresters' lodges. Two nature appreciation centres along the lines of the English "field centres" are going to be set up close to regional animal reserves. There are also some open-air facilities - recreation and rest areas - for relaxation in tranquil surroundings, both in woodland and by the water's edge.

However, these parks cannot be developed according to precise time-schedules. They offer primarily superb landscapes which have been fashioned by generations of countryfolk, peasants, shepherds and foresters. They constitute a part of the French countryside and intend to control their own destiny. The real change taking place today is in the attitudes of the communities and other local groups which, with State aid, are now beginning to accept responsibility for the parks.

Decentralisation of park establishment and administration stands out in a country where centralism is active in many spheres. There is evidence that the creation of such parks, although desired by the central Government, has not always been actively pursued because the local authorities and inhabitants did not see any need for them.

(1) In metropolitan France and one in Martinique

It is not over-ambitious on the part of the Government to provide incentives and make the regions aware of this new approach to town and country planning, while at the same time leaving them altogether at liberty to act on this formula or not.

Such Government involvement is constant and applies at all levels. A posteriori, it lends weight to the spirit behind this movement:

"No park shall be established perforce from some Paris ministry. Parks shall derive from the conscious and enlightened determination of the local communities and from a genuine policy decision on a given method of approach. They shall survive by virtue of the efforts and faith of the local inhabitants and of their users. Failing this, whatever regulations are laid down will remain a dead letter...

...Inhabitants and users should be closely associated with each park's administration. It should come to be regarded as their achievement and, in a way, their offspring. It should have made demands on them in terms both of effort and of financial outlay(1)".

The situation could hardly be otherwise, for it should not be forgotten that these parklands are both cultivated and inhabited and that the 900 or so communes which today are directly affected account for more than 300,000 inhabitants. Naturally, nothing can be achieved without them, and their initial contacts with the official responsible for each park or with visitors from large neighbouring towns immediately produced proposals and concrete measures which made the parks a hard fact even before they had been officially created.

This joint action on the regional natural parks manifests itself in the form of:

- town-country co-operation: the large neighbouring towns collaborate with the rural communes in the area to prepare and implement a park development programme;
- regional or departmental co-operation: the departments, sometimes in two different regions, jointly assume responsibility for supplementing normal State subsidies to finance park facilities;

(1) Journées de Lurs en Provence, J.F. Thery, 1965.

1.8.7

- socio-vocational co-operation: the regional Chambers of Commerce and Industry, the Chambers of Agriculture, the Chambers of Occupational Trades and the Forestry Commission are represented on the bodies concerned with park establishment and administration, the joint associations which already comprise representatives of the rural communes, large towns and departments contributing to running costs and the provision of facilities. Also closely involved in these projects are large public concerns, the farmers' unions, the Young Farmers' Associations and the forester-silviculturist landowners' unions which seek the best way to participate actively in the park's development. Finally, farmers inhabiting some of the park regions have resolved to assume responsibility themselves for the reception of outside visitors and established an "Association for the advancement of farmers within the framework of the regional natural park";
- administrative co-operation: the representatives of eight ministries compare and co-ordinate their park programmes and take measures to safeguard valuable examples of the country's natural heritage or architecture. The representatives of the Ministries for Nature Conservation and the Protection of the Environment, Territorial Management, Equipment and Housing, Tourism, Cultural Affairs, Agriculture and Rural Development jointly examine, together with the mayors, private citizens and architects directly involved, the files dealing with rural building in certain particularly critical areas. In other instances, the park authorities themselves undertake this architectural work;
- university co-operation: the universities assist with studies and the provision of scientific equipment.

Over the last four years, 10,000 young people belonging to the "associations de chantiers" or local groups have spent three weeks of their vacation on development work for the rural communes in which these parks are situated (creating footpaths, carrying out alterations in villages, etc.).

The originality of the regional natural parks finds special expression in the "Constitutive Charter", which ratifies the general agreement between the State, elected representatives, interested local bodies, and private individuals who wish to participate. As a result, landscape planning and supervision are undertaken jointly, with local authorities and ad hoc bodies pooling their efforts. This entails establishing a permanent team of advisers, who help the communes and farmers to plan facilities and the measures needed to develop them in the park context and to conduct an information campaign among town dwellers, and especially young people, to encourage them to learn more fully about the protected area. It is up to the park director to co-ordinate development, administration and the work of the advisers.

In view of the decisive importance of these duties, the candidates selected for the director posts all underwent the same one-year training course. Both across France and in 16 countries throughout the world, they familiarised themselves with methods for protecting and developing natural parks. Their training was multidisciplinary, and covered such areas as administrative law and the social sciences. After completing the course, they visited the actual rural areas to promote on-the-spot studies of their parks and to develop planning to the point where it culminated in the Constitutive Charter - the key factor in the official establishment of the parks they now direct. These promotional and administrative functions are particularly essential as no specific set of regulations has been brought in for the regional natural parks. The directors must rely on everybody's voluntary acceptance of, and adherence to, existing regulations and on educational/information campaigns among the inhabitants and users of parks comprising an area of approximately 1,850,000 hectares (i.e. more than 3% of the country).

III. Background information on regional natural parks in France

Their legal basis

The criteria for designating an area or a group of areas as a "regional natural park" and the regulations for acquiring this title were set out in the Decree of 1st March, 1967. They clearly differentiate between the regional natural park and urban or suburban open spaces or "open-air and recreation centres".

Definition

The regional natural park is an extensive complex, covering from a few thousand to some tens of thousands of hectares, and comprising one or more communities. Being aware of the general economic interest which a park development programme presents for the entire population, these communities freely agree to make all or part of their land available for development with a view to safeguarding the unity of the area selected, nature conservation, the revival of rural life, ensuring that buildings in predetermined areas are in keeping with their surroundings, the reception of visitors and their relaxation and the development of certain cultural and sports activities which can appropriately be pursued in such a natural setting.

Over and above the land belonging to the local communities, the regional park can comprise private estates, hamlets and villages, which thus come under the regulations on environmental protection. Hunting and fishing are carried on in the parks according to the usual rules. Special regulations for these activities may be prescribed in certain regions owned by public or private communities which have contractual agreements with the parks in order to safeguard walkers or to promote the reproduction of certain animal species.

Area

The park is a large expanse of countryside or forest which varies in area but cannot be less than approximately 5,000 hectares. Its natural setting, its flora and fauna, rural

dwellings and buildings of architectural interest, or sometimes merely the proximity to a large town, mark it out as a privileged area for nature conservation, relaxation and cultural activities.

Although it is freely accessible to the public at large, the park must have clearly-defined boundaries. Some parks will comprise several distinct areas, geographically separated from each other, but all satisfying the same criteria. The park boundaries systematically avoid all localities that are too large.

Facilities

The aim of park facilities is to promote man's contact with nature. Consequently, the park cannot provide all the recreational facilities town and country dwellers might wish. Theoretically, sports facilities designed for competition and to attract paying spectators do not have a place in the regional natural park.

The quantity and type of park facilities vary according to the specific features of the park to be established. In parks located near large urban centres and designed to receive large numbers of visitors, the facilities will be more numerous and wide-ranging than in basically rural-orientated parks created in areas remote from large towns.

Only sports and cultural facilities which call for large open spaces or special conditions of tranquillity and silence are acceptable in regional natural parks or in their immediate vicinity. This rules out equipment which is heavy, designed specifically for competition or commercially-orientated, or that which is noisy or helps to recreate an urban-type atmosphere and tempo of living.

Possible park activities include:

- sports (walking, long-distance skiing, climbing, sailing, canoeing, golf, hunting, fishing, riding, cycling, swimming, etc.);
- cultural pastimes (restoration of monuments and old villages and provision of facilities to enable them to be used, open-air museums, multi-purpose rooms for temporary exhibitions, open-air theatres, craft workshops, natural history museums and field centres, arboretums, nurseries, regional information centres and the discreet demarcation of footpaths of interest from the botanical, forestry and geological standpoints);
- social functions (youth clubs, rural social centres, clubs, etc.).

Particular attention is paid to the problem of access to the parks and to internal transport facilities. These must be silent, nor should they require an extensive network.

Establishment

Regional natural parks are set up on the initiative of local authorities, communes or departments. Consequently, the Inter-departmental Commission for Regional Natural Parks, comprising representatives of the central authorities concerned and attached to the Minister responsible for nature conservation and the environment, requests the government to consider a given project only where the area concerned makes a suggestion to this effect. If the government deems the proposal submitted by the area to be of interest, an examination of the park project can be initiated. This study is supervised at the national level by the Inter-departmental Commission and locally by a working group set up under the auspices of the Prefect in the area.

Upon completion of the study, the Commission can recommend that the government approve the establishment of a regional natural park in accordance with the designation procedure laid down in the ordinance. The submission of a "Constitutive Park Charter" is a pre-condition for the designation of an area as a regional natural park. This document, which is drawn up in co-operation with the local communities and other groups concerned and testifies to their desire to develop their own region, covers the following five points:

1. the nature of the administrative body;
2. diagram of the park;
3. programme of projected facilities;
4. legal provisions and regulations to be implemented for the protection of the park;
5. proposals for financing facilities and for the administration of the park.

The Charter constitutes, in effect, the "Park Laws" since the park is not created in the context of any specific legislation but by virtue of existing regulations. It is therefore necessary that all concerned should voluntarily abide by its provisions.

Clearly, the designation "regional natural park" does not transform an area overnight. As in the case of the national park, it takes a number of years for the various programmes to take full effect.

Administration

The local authorities which have proposed the creation of a park are made responsible for its development and administration, under the supervision of the Inter-departmental Commission, whose task it is to ensure compliance with the basic principles governing regional natural parks and to co-ordinate the work of the different Ministries involved, especially with regard to park facilities and subsidies.

There is no standard body for park administration. Various approaches are possible: a joint body linking public bodies (e.g. the Forestry Commission) with the local authorities, a foundation, or an association however the joint body formula should be preferred.

Local inhabitants, land-owners and park users who are members of the "Association of Friends of the Park" co-operate with the administrative body and contribute to promoting and developing the kind of creative activities for which the park is particularly well-suited. A director co-ordinates development, administration and the promotion of activities in accordance with the principles laid down in the Park Charter.

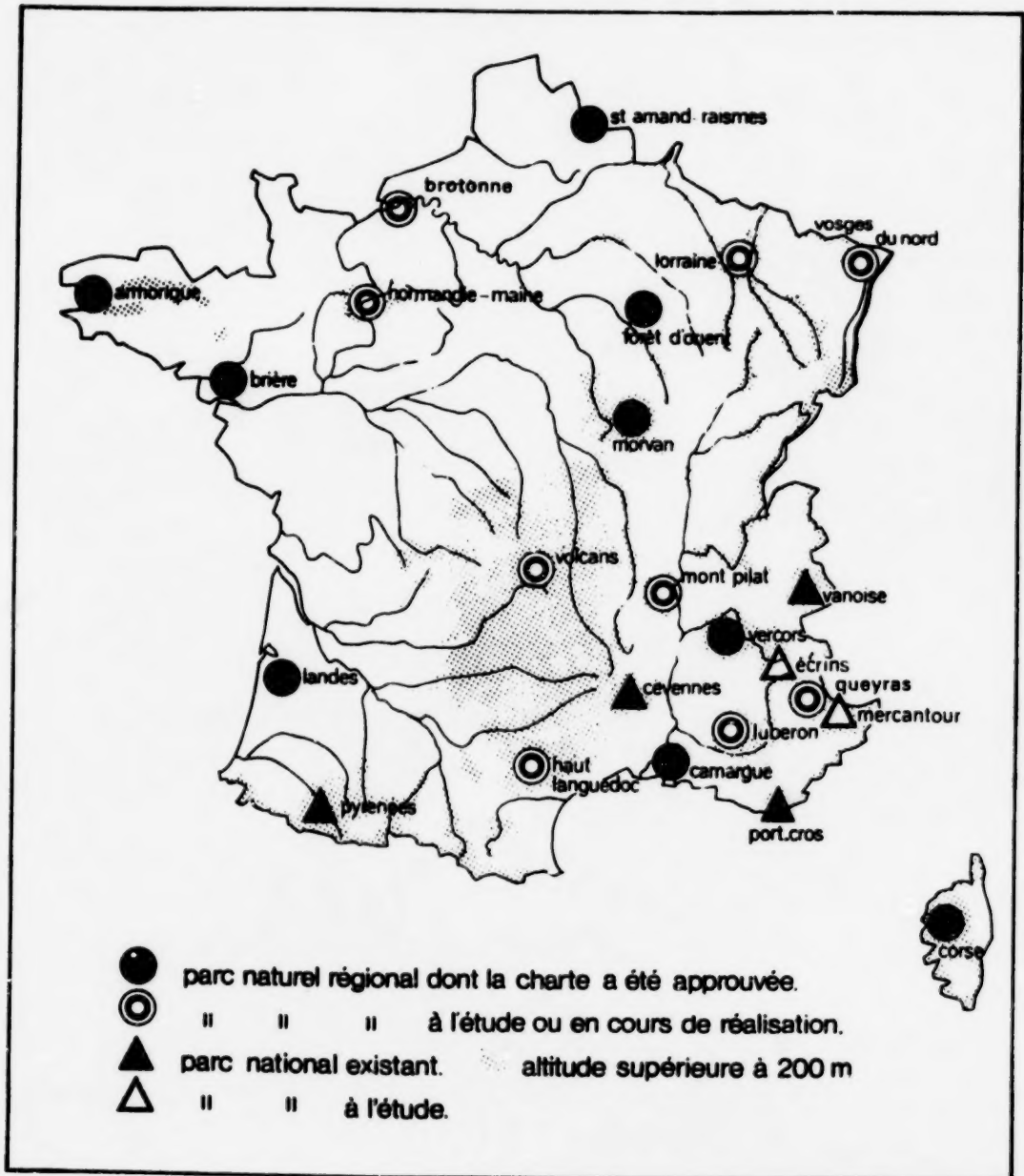
Financing

Although the initial studies are largely financed by the State, the cost of most of the park facilities is borne by the local communities, helped by the usual State subsidies (at present, these do not figure in any one Ministry's budget).

Private support comes from gifts, particularly from foundations, or the payment of certain facilities (e.g. hiring of horses or boats, or payment to the administrative body of part of the profits made by restaurants and camping sites).

PARC NATIONAUX **ET** **PARCS NATURELS REGIONAUX**

(MINISTÈRE DE LA PROTECTION DE LA NATURE ET DE L'ENVIRONNEMENT)



N A T O U N C L A S S I F I E D

2.1.0

TOWARDS COMPREHENSIVE MODELS OF THE MAN/ENVIRONMENT RELATIONSHIP
AND AN INTEGRATED APPROACH TO THE DECISION PLANNING PROCESS :
A PRELIMINARY STUDY (FRANCE)

At the decision planning stage, it should be possible to predict the total impact of these decisions on the environment. The preparation of comprehensive models could be very helpful in this connection (on condition, of course, that they are not used as the only yardstick but are considered merely as a contributory factor for the decision-maker). Three years ago in France, a first attempt was made to adopt a comprehensive approach to the relationship between man and his environment, with particular reference to urban development. Since then, other more sharply-defined approaches have been made at Le Vaudreuil (see 1.5). This first theoretical document has been submitted because of the underlying aspirations it reveals.

N A T O U N C L A S S I F I E D

2.1.0

2.1. TOWARDS COMPREHENSIVE MODELS OF THE MAN-ENVIRONMENT RELATIONSHIP AND AN INTEGRATED APPROACH TO THE DECISION- PLANNING PROCESS

by the Bossard Management

In search for a better rationalization of the decision-making process in the field of environment, new instruments and methods such as system analysis, which had so far been reserved for other fields, are now being used more often.

Despite the difficulties encountered for the formalization of socio-economic phenomena, it has seemed worthwhile following and developing the efforts undertaken, for example, in territorial decision-making, with methods such as:

- urban game simulation;
- modelization (e.g. in France, the model prepared by a working group under Professor Bourliere in 1970, which is now prolonged with an exercise concerning a new town, le Vaudreuil and the Seine-Normandie basin authority);
- research on the integration of social indicators in the social changes models (e.g. in France, that carried out by the Institute for Economic Research and Planification at Grenoble).

The difficulties of the analysis, however, remain, and all efforts towards a theoretical approach are rapidly thwarted: geographic reality does not lend itself easily to being translated into simple models, interfaces between physical and social phenomena are difficult to delimit, and they remain unsure. Furthermore, the objectives aimed at do not generally let themselves be qualified and the horizons to which they apply are too specific for being easily adaptable to the traditional lines of planification.

When experience may be concretized in simple systems, such as the usual growth models, the explanations concerning environmental alternatives must rest on a thorough knowledge of complex relationships acting and reacting together counter-intuition-wise; and the basis for such knowledge has been progressing only very recently.

In practice, the decision-making approach goes further than the simple definition and formulation of the problems since it gives precedence to finding the decision centres to complete the inventory of political solutions/choices, and to formulating the methods for the evaluation and selection of choice criteria. The support which may be given by the system analysis to the decision-making process for implementing an environmental policy is less significant in the results actually obtained than in the definition of interrelationships and demultiplicating effects of the measures proposed. The possibility of founding a hypothesis on the dynamic evaluation of a given system and that of checking the results of the hypothesis through a simulation process will,

2.1.2

therefore, indicate not only the sensitive items of the system on which the policies which will have been chosen could bear most efficiently, but also the combination of instruments that are the most appropriate for solving a given problem.

In this field, a study carried out in 1970 in France for the Délégation Générale à la Recherche Scientifique et Technique by the Centre Européen de Management, which is summarized hereafter, may be considered as a first approach in the modelization of the relationship between man and his physical and social environment.

Recently, the financial authority of the Seine-Normandie River Basin, has developed a decisional model applicable to the water, known as "modèle Popol" (Policy/Pollution), which combines purely economic constraints and variables with the characteristic parameters of the governmental policy in that river basin.

There remain gaps in this area, but this type of analysis may under certain conditions correspond to the definition of an environmental policy. The French Government plans to support this type of research, in particular, within the framework of the activities of an Interministerial group for the evaluation of the environment, which was created in June 1972 to assist the Prime Minister and placed under the authority of the Minister deputy to the Prime Minister for the Protection of Nature and the Environment.

I. THE TOOLS OF STRATEGIC DECISION-TAKING

In recent years, both national administrations and industry have developed methods for strategic planning and decision-taking. A number of these methods are now being applied to environment policy-making.

A. Exploratory methods

Generally speaking, these methods combine a given number of tools and creative or consensus-orientated procedures which feed these tools with the necessary statistical data, information or assumptions.

(a) The procedures rely on the resources of the imagination, and entail a relatively systematic approach and relatively sophisticated, scientifically-calculated incentives. These procedures, in order of operational complexity are as follows:

Gathering of experts for opinion inputs; no machinery for checking the validity of the results; "brainstorming" and "creative" sessions, where a group leader guides the search for ideas and opinion-gathering on their validity, or the occurrence probability of events which the ideas imply; the Delphi method which introduces a degree of statistic rationality into the assessment of replies as well as a method for weighing their reliability, by successive iteration..

(b) The tools themselves include:

The scenario method: this method is the hinge between procedures and tools and is, therefore, all the more relevant to this paper. It consists in creating "scenarios", that is, formulating possible future situations in absolute terms, independent of present conditions, and in subsequently tracing the logical sequence of events, thus enabling a link-up between the present situation and various projected "futures". In an environment-type problem, several scenarios can be prepared - based on the aggregate of factors within a future environmental typology (according to the economic, social and political variants, etc.) - and then combined by iteration.

The cross impact analysis method: this method assesses the influence of a materialising forecast on all others envisaged concurrently, within the framework of a scenario or following a gathering of experts. It allows subsequent correction of successive iteration projections, incorporated in a probabilist procedure, by introducing real information and assessing its impact. This method is particularly effective for technological forecasting or the refinement of a policy that is being formulated, since it makes allowance for the initial results of a given measure (e.g. anti-nuisance), taken within the context of that policy.

Input/output matrices: These matrices based on the Leontief inter-industrial exchange tables utilised in national accounting, allow construction of an image with a fixed structure. They are valid only in aggregate terms, at the sectorial level, for example, where, with the help of coefficients constructed by successive iteration, they can provide a photograph of the predictable pollution level corresponding to a pre-determined coherent state of human activity (essentially industrial).

Morphological analysis: This is a method of systematically investigating technical possibilities or requirements. It consists in preparing a chart of the different values or "forms" that can be assumed by the various parameters in a technological system, or describing a human need and, additionally, in formulating all possible combinations of these values: some of these are impossible (i.e. incompatibilities), others already exist, finally, others represent ideas or new hypotheses which must be sifted by a consensus-orientated procedure (i.e. Delphi method or gathering of experts).

2.1.4

Dependence graphs: This method enables variations to be determined in the component values of a system, deriving from a modification of the values in a given number of variables which are outside this system but which are, nevertheless, capable of influencing its components.

B. Normative methods

By definition, and based on the expression of predictable needs or consequences (cf. exploratory methods), these methods examine technological or institutional systems, measures to be taken or decisions to be formulated. The following methods can be differentiated:

Methods of economic calculation: These methods which have proved highly successful over the last fifteen years - particularly in investigating optimal investments in public infrastructure - are based on the twin concept of monetary equivalent and generalised cost. This method allows the expression of choice criteria (i.e. cost or effectiveness) applying the same unit, monetary or general and, consequently, their reduction to a single criterion, according to which a simple method of choice is applied.

Pertinence graphs: This method describes strategies by linking fundamental activities (e.g. investment, incentive, co-ordination) to objectives. The "pertinence" of actions to objectives is assessed on a notational basis by scales of values which each fundamental activity contributes to the attainment of objectives. In this way the notational approach enables those choices to be made which will affect the expressed strategies, taking into account the given system of values. This method may, in fact, be considered normative only when the objectives have been defined beforehand. In most cases, its function lies rather in decision formulation as it allows the consequences of a given selection of objectives to be assessed. Its main advantage in a problem such as, for example, the strategy of the anti-nuisance campaign, is that, depending on the requirements or the strategies which have been examined, it enables the selection criteria under consideration to be amalgamated.

Multi-criteria analysis. Like the previous method, this approach is based on the graph system. However, instead of combining the criteria into a single notation, it retains the multi-criteria principle. This generates a very large number of possible criteria, to which a sifting process is subsequently applied.

C. Their application to the problems of development

All these methods are now being used more or less extensively in studying and resolving problems of land development. The methods most currently in use are obviously based on gatherings of experts and economic calculation together with the input/output matrices approach (in particular, with regard to regional equilibrium). Among more recent and more ambitious techniques the scenario method is now being introduced in order to evolve a nation-wide strategy. For example, in France the SESAME(1) is currently attempting a definition of various projections of France in the year 2000: France with its 100 million inhabitants; France concentrated in its border areas; farming in France without land. A detailed analysis of the present situation has clarified the methods by which these projections can be realised with the minimum of difficulty. At a second stage, the study of currently observable evolutionary trends has resulted in the definition of a more average projection of France in the year 2000, and of the phases leading to its attainment.

III TOWARDS GLOBAL MODELS

In order to gain greater control over environmental phenomena, the French Government is endeavouring to apply these methods to obtain explanatory, global-decision models. The most recently used of these is the "Man-Environment" model, constructed(2) on the initiative of the DATAR (Délégation à l'aménagement du Territoire et à l'Action Régionale - Delegation on National Development and Regional Action) and of the DGRST (Délégation à la Recherche Scientifique et Technique - Delegation on Scientific and Technical Research).

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- (1) SESAME: Système d'Etude du Schéma d'aménagement de la France (System for the study of development in France).
 - (2) This model was constructed in 1970-1971 by the Centre Européen du Management (European Management Centre) 10, Rue Lyautey, Paris 16).

2.1.6

The purpose of this model is to establish a link between pollutant emission at the level of the town and its environment on the one hand and its development on the other.

The object in constructing this model is to evaluate:

- the impact of the totality of human activity on the individual (that is, assessing to what extent man is harmful to man);
- the consequences of a given approach to urban functions;
- the consequences of the combined use of different means for implementing these urban functions.

The model should facilitate the search for solutions to problems arising from a current or planned situation, by assessing that situation in its entirety. It is not easy to construct this type of model, but the mere fact of making the attempt reveals:

- the gaps in our present knowledge of phenomena, or measures which have been adopted hitherto;
- the factors which it would be most valuable to control and moreover, as soon as possible.

This model also enables a really functional instrument of scientific progress to be developed, not merely to meet economic imperatives, but above all to satisfy human needs.

Pollutant emissions derive from the implementation of technological processes which, in fact, merely reflect the activities and aspirations both of the community and the individual. The value of this model lies in its having linked pollution to the quantitative and qualitative expression of human needs.

The construction of this model is based on the succinct but classical sociological analysis of human needs:

Basic needs: nutrition, clean air, hygiene, activity, complemented by the need for mobility which enables other needs to be satisfied;

The need for activity: broken down into economic activity (occupational activity of individuals, production by communities) and leisure-orientated activity.

2.1.7

This model is deliberately restricted to pollutant emissions as there is no total agreement among experts on the definition of what really constitutes a "nuisance" for man. Determination of the pollutant rate at any given place is linked to the relatively unexplored problem of diffusion, a field of research for physicists and meteorologists.

Moreover, construction of the model as well as its initial application revealed that serious gaps in our knowledge, especially in the study of industrial enterprises as social agents, limited the number of possibilities for applying the model immediately.

From November 1970 to April 1971, the model "Man-Environment" was applied to the greater Paris area. The main phases of this operation were as follows:

1. The initial task was to make an assessment of the greater Paris area for 1968-1969 from the standpoint of transport and the quality of the air - the primary factors in any more complete assessment.

Transport

On the basis of surveys conducted by the Service Régional de l'Équipement (Regional Planning Service) and of statistics published by carriers, the number, duration and speed of different types of travel were ascertained. In 1968, more than 12 million journeys occurred daily, representing over 100 million kilometres, including 50% by private vehicles, and an emission of 4,000 tons of carbon monoxide, of which 1,600 tons were emitted in Paris itself.

Quality of the air

Collation of scattered data with the assistance and advice of technical experts, produced a complete picture of heating methods in the greater Paris area.

In Paris, almost half of all flats have no central heating; one third of these are heated by a simple coal stove. The average consumption was determined for each type of heating. On this basis, the mean number of therms required by households could be ascertained. In 1969, 17,000 therms were needed for the entire year to heat one Paris flat. This, in turn, produced an annual emission of around 64,000 tons of sulphur dioxide and 18,000 tons of dust.

2. Subsequently, these needs were reintegrated into the socio-economic context of the Greater Paris area in order to forecast their evolution and an attempt was made to determine the criteria which prompted individuals to satisfy their needs by any given method.

2.1.8

A large number of social and economic parameters were applied: population, income, hours of work, etc. By comparing the values of these parameters with the base situation (1968-1969), and with other periods, the evolutionary pattern of travel and heating requirements could be accurately determined.

An analysis of the dependence graphs, prepared on this occasion, revealed, for example, that a 10% reduction in working hours entails a 2% increase in the amount of heat required by households - because the length of time flats are occupied goes up by 2.5% - as well as an 8% cost reduction in the amount of time which individuals consider they spent commuting.

3. An analysis of this distribution of individuals among the various means of transport and methods of heating resulted in the determination of the relative cost parameters and of the qualities of these means in the range of users choice.

A "generalised cost" of the forms of transport was fixed, taking account of their speed and comfort and quantifying the reaction of users to these qualities (e.g. one hour of commuting to work was regarded as a loss of Fr. 3).

Those users who react to generalised cost differentiation among the various transport means select one or other of the means. By analysing various types of commuting at different periods, the law of distribution of users could be determined, according to the different means of commuting employed.

In the same way as for travel, a generalised cost was computed for heating methods which included, apart from running costs, the estimated costs of discomfort arising from the difficulty of adjusting the heat output, the insufficiency of therms produced and the maintenance of equipment. However, in view of the durable nature of heating equipment, any change in the amount of such equipment does not depend solely on the values of the generalised equipment costs. Consequently, account was taken, on the one hand, of a selection criterion connected with the investment to be made in order to install or modify a heating apparatus, and on the other hand, of factors which have nothing to do specifically with heating, but which are concerned with the building, demolition or renovation of dwellings.

4. In order to illustrate this model's operation and to show how it may be used both as a tool for forecasting and as a policy planning tool, two simulation games were devised.

2.1.9

The first game postulated a body of general assumptions corresponding to a 10% growth of the population in the Paris suburbs. It was presumed that there would be no modification in the qualities and costs of means of transport or heating, and that no official measures had been taken to reduce pollutant emissions.

In this case, it was noted that the increase in distances covered by private vehicles (80 million kilometres each day as against 50 million kilometres in 1969) resulted in daily carbon monoxide emissions of 6,500 tons compared with 4,800 in 1968, and that in the heating sector, there had been a drop in single heating units. Coal was yielding to oil and the rate of gas utilisation remained unchanged. The annual sulphur dioxide emissions were determined as 80,000 tons compared with 64,000 tons in 1969, and dust emissions as 23,000 tons compared with 18,000 tons in 1969.

In addition to the general growth hypotheses of the first game, the second game posited certain changes in the means together with several anti-pollutant measures.

- higher running costs for private vehicles (e.g. parking tax);
- greater speed and comfort of public transport;
- grants for renovating heating units;
- reduction in the price of gas;
- installation of air filtering equipment.

The number of kilometres covered by private cars daily in this case was around 70 million. Carbon monoxide emissions increased to 5,000 tons.

As regards heating, the competitive price of gas has attracted a large number of users away from coal, and the general drop in unit emissions limits annual emissions to 57,000 tons of sulphur dioxide and 7,000 tons of dust.

At the industrial level, the model provides for the analysis and preparation of a map of industrial pollutant emissions. Initially, application of the model was restricted to the emissions of each production unit type envisaged:

- cement plants;
- incinerator units (for household refuse);
- beet sugar refineries;

2.1.10

pulp making plants;
fertiliser industry;
thermal power stations.

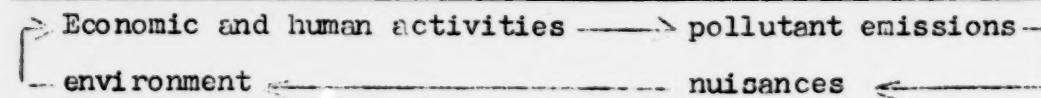
Each process is broken down into a series of basic phases. The nature and quantity of inputs and outputs for each phase was determined as well as the values of factors influencing the phase operation. Seen as a whole, by applying this method of so-called "technological chains", not only can pollutant emissions be defined for any given terminal production, but the impact of any modification or addition can be checked. For example account was taken of:

- regulations in force at cement plants;
- the addition of decantation filters and tanks during the manufacture of KRAFT paper;
- the height variation of chimneys in the study of thermal power plants.

The above model permits the global evolutionary study of economic and human activities at the urban level and their impact on pollution.

It has already been applied to the greater Paris area and could also be applied to planned or existing urban schemes.

Moreover, this model, restricted to pollutant emissions, must be regarded as the first stage in a functional decision-making instrument available to regional planners and their opposite numbers and forming the chain



III. RECOMMENDATIONS TO MEMBER COUNTRIES' NATIONAL AND REGIONAL PLANNERS

In order to have the best available decision-making tools, member countries could step up exchanges of information, concentrating to begin with on methods which have been used, and also on the results of previous research, particularly projection studies which require scales of reference.

By comparing and contrasting the different scenarios either terminated or in progress, those scenarios prepared to date on the above basis could be completed.

2.1.11

Finally, within the overall context of an urban study, construction of models(1) reveals the gaps in knowledge of socio-economic phenomena and of the methodologies vital for studying them, gaps which could be filled by concerted action.

Only now is the town being studied as a living system. Although the mechanisms governing the travel patterns of individuals have been examined in detail, the same cannot be said of the quality of the air, nutrition and hygiene. Moreover, it would seem that the functional approach, widely applied hitherto, and which has proved fruitful, will have to be reassessed, at least partially. The severely technical approach to the study of production units must be abandoned and methods applied which take account of technological innovation and the behavioural pattern of entrepreneurs as social agents.

Furthermore, it is important to go beyond an examination of the link between economic and human activities and pollutant emissions. It is, therefore, particularly necessary to take advantage of previous experience in order to work out national and regional-level strategies for examining nuisances in all areas represented by the links in the chain mentioned earlier. Such investigation will enable research on more specifically nuisance-orientated problems (e.g. spread of pollution, prevention and cure, cost of nuisances, approach to nuisances) to be linked to the research already discussed.

However, such a specifically oriented study can only take place within a dialectical context which allows a comparison to be made of possible strategies and concrete achievements. The current national planning and equipment programmes could well be the framework for this kind of dialogue between those who plan, produce and use these studies. The results of such a dialogue could prove highly advantageous for specialists in regional and national planning. Moreover, studies could be carried out at different places. Three types of place would be particularly conducive to such a dialogue.

- a new town where a body of methodology could be formulated, slanted more towards nuisance problems in the context of urban living than towards industrial development;
- an extensive metropolitan area. The aim should be to define research programmes and to examine the impact of industrial developments, expressed in terms of pollution and nuisance rates;

(1) e.g. "Man-Environment"

2.1.12

- a capital city. In this case, a scenario entitled "Capital of the environment" could be envisaged. Its very designation defines its orientation. By contrasting this type of scenario (which could, moreover, be prepared on the basis of several normative assumptions) with the current state of the environment taken as a point of reference and with its probable evolution, medium-term goals could be formulated and policies designed to attain them could be hammered out forthwith.

N A T O U N C L A S S I F I E D

2.2.0

ENVIRONMENTAL AND ECONOMIC ACTIVITY ANALYSIS MODELS : STUDY
METHODS FOR THE INDUSTRIAL SECTOR : (UNITED STATES)

Sophisticated economic models are now extensively used for regional planning and development forecast. These models however, lead to decisions disregarding completely environmental considerations. This report on Environmental and Economic Activity Analysis Model is an attempt to identify and introduce in such models the impact of factors affecting the quality of air, water, land and other dimensions of the human environment. While still difficult to measure and integrate in an econometric approach, the relationships of environmental functions with various other external and internal functions could be evaluated. Although not fully tested, bringing environmental considerations in economic models appears to be essential in any strategy for regional development.

N A T O U N C L A S S I F I E D

2.2.0

2.2. ENVIRONMENTAL AND ECONOMIC ACTIVITY ANALYSIS MODEL (EEAAM)-
METHODS FOR STUDY OF THE INDUSTRIAL SECTOR

by the Dr James R. Hibbs
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(seconded from Department of Commerce of the United States)

I. Introduction

A study to evaluate the feasibility of providing measures of pollution associated with patterns of production and consumption was completed early in 1971(1). The demonstration was in terms of environmental and economic activities in the United States, with data and sample computer printouts aggregated at the national level.

The same technique can be applied to a region, and need not be limited to application within the United States. Hence the conceptual design and summary of the feasibility demonstration are presented as a contribution to the general work plan for the CCMS pilot study on Geographic Strategy for the Environment.

II. Progress: Developing the Model and Data

The purpose of the test was to demonstrate the feasibility of developing an operational model which would combine existing basic measurements of national product and income with measurements which would make it possible to identify associated impacts on the quality of air, water, land and other dimensions of the human environment. Thus, the model is designed to measure the functional relationships of economic variables such as employment, production, income, and consumption with outputs of residuals, emissions and pollutants. In addition, provision is made for estimating costs of meeting alternate standards of environmental quality, for application of alternate technologies for pollution abatement, and for alternate production processes.

The salient characteristic of the model is that it addresses the root problem of relationships between economic activities on the one hand and the environment on the other hand. This avoids the fallacy of assuming that the economy and the environment represent polar choices. Figure 1, ECONOMIC AND ENVIRONMENTAL FLOWS, shows in flow diagram form the relationships between market processes, the externalities (pollution, residuals, emissions) related to these processes, and the benefit-cost evaluations to functionally relate damage reductions to costs of achieving these damage reductions.

(1) Dr. John H. Cumberland, Bureau of Economic Research, University of Maryland, and Paul H. Gerhardt, Chief, Standards Research Branch, Implementation Research Division, Environmental Protection Agency, provided indispensable contributions to the feasibility study on which this paper is based.

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A non-technical discussion of the capability of the Environmental and Economic Activity Analysis Model (EEAAM) to handle these relationships is discussed in Section III, below.

III. Model Demonstration: EEAAM

The EEAAM was programmed concurrently with the gathering of initial data. Because the data were not complete, the demonstration of EEAAM was completed with hypothetical data, arrived at on the basis of best estimates within the available time.

The EEAAM feasibility demonstration included 14 computer printouts. These demonstrated the generation of pollution coefficients (pollutants per unit of economic output), gross pollution flows by selected industry, evaluation of waste treatment alternatives, net waste flows after treatment, plus waste flows per dollar of purchases by consumers, investors, and government programmes. The market relationships are based on existing inter-industry input-output models.

One set of coefficients showed the technological relationships between potential industrial waste loadings (by type) to the environment, and their market valued outputs. These coefficients may be calculated directly from EEAAM data, and together with other sets of coefficients, represent the basic analytical tools of the EEAAM concept. They represent, in summary form, the technological relationships that existed in the base year between the various types of pollutant and the output of the industry in question.

It should be noted that for the purposes of EEAAM, gross residual has been defined as that waste, or pollutant material, which cannot be recovered at a profit. It follows from this definition that the short-run profit maximizing firm (of the classical economics) would simply desire to get rid of this material as cheaply as possible, i.e. dispose of it to the environment. Thus, gross residual is, in a potential sense, the amount of pollutant that would be loaded upon the environment in absence of any voluntary restraints or legal standards.

A second set of coefficients presented the technological relationships between actual industrial waste loadings (by type) to the environment, and their market valued outputs.

Here the gross residual quantities have been replaced by net waste coefficients. Under the EEAAM concept, net waste is defined as the sum of the gross residual that is discharged untreated, and the amount of gross residual that "escapes" treatment processes and does not meet prospective standards.

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The net waste coefficients, like the gross residual coefficients reflect, in part, the technological relationship between an industry's monetary output and its generation of pollutants. They also reflect the nature of the various abatement technologies. Thus, these coefficients, which may be calculated directly from EEAAM data, represent one of the basic analytical tools of the EEAAM concept.

A set of cost coefficients represents the average abatement expenditures, by industry, required to transform and reduce the gross residuals to the net waste levels. This indicates the abatement expenditures, in coefficient terms (i.e. thousand dollars cost per million dollars output) associated with the treatment of the gross residual. It is this treatment which causes the net waste coefficients and totals to differ from the gross residual coefficients and totals.

These treatment expenditures were generally not available for each pollutant separately; therefore, they were aggregated over air pollution abatement and water pollution abatement for each industry shown.

For both air and water pollution abatement, the costs are broken into capital (fixed costs) and annual (operating costs). The capital costs represent replacement value rather than amortized values. In the final EEAAM, cost data, both fixed and operating, will be used not only for each pollutant, but also for each treatment process where more than one may apply. Thus, the EEAAM will generate a much more detailed cost table than is available for this demonstration.

The cost coefficients are generated in a manner similar to that employed to compute both the gross residual and net waste coefficients.

Gross residuals stemming from four industries in 1963 are provided.

Given the gross coefficients, the levels of gross residual can be projected for any dollar value of industrial production. A computer programme suitable for calculating such a projection has been developed, and is capable of providing such values.

These gross residual levels were generated by actual monetary gross output levels for 1963. Thus, these figures correspond (except for rounding errors) to the "actual" pollution levels in 1963. Forecasted gross output levels for any year may be employed at this stage to yield projected gross residuals. The 1963 output data were used for this demonstration, however, in order to verify the validity of the programme.

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It should be noted that any use of the gross residual totals, which employ the gross residual coefficients for their formation, must be predicated on the existence of the same, or very similar, technology level as existed in the "base year". For instance, a gross residual projection for 1970 which employs the 1963 gross residual coefficients, implicitly assumes that the waste generating aspects of production remain relatively constant between those years. In a sense, this use of a base year "freezes" the technology to that of the same year. Thus, while projections from the base year coefficients are very useful, caution must be exercised in their usage. This is so because technology, and thus the coefficients themselves, may change over time.

By requesting data estimates for future years, and providing for new data inputs, continued updating of the gross residual coefficients will be possible. Thus an explicit recognition of changes in production and abatement technologies will be included.

Net waste stemming from four industries by pollutant type in 1963 is also provided,

These net waste totals were calculated from the net waste coefficients in a manner analogous to the computation of the gross residuals. Thus, the coefficients for net waste "freeze" the technology to that in existence in the base year. Updating data will permit estimation of net waste coefficients for future years, and thus an explicit recognition of technology change.

The feasibility test also included generation of information on the total fixed and operating costs required by four industries to reduce the gross residual to net waste. These abatement expenditures totals were calculated from the cost coefficients described above. Although they represent abatement expenditures for 1963, the EEAAM makes it possible to project costs to any year for which an estimate of gross output is available.

The model gives explicit recognition to the linkages between industry output and the demands for intermediate outputs (materials) required to satisfy that demand. Thus, industries create pollution by satisfying two types of demands for their products: final demands and intermediate demands. Both coefficients for and actual potential pollutant impact of various consumption goods are explicitly handled. For example, some output of the envelope industry is sold to final consumers such as households. In order to produce these envelopes, raw materials (intermediate outputs) must be purchased from other producers such as the paper pulp industry. In meeting this intermediate demand, the paper pulp industry generates some gross residual. In a like manner, other industries that are

2.2.5

direct suppliers to the envelope industry also create some gross residual. Each of these industries, in turn, can only increase its production by increasing purchases from its direct suppliers. Thus, the structure of both production and waste generation exhibit "backward linkages".

The EEAAM is capable of showing the amount of gross residual, by type, generated by all these indirect stages of production necessary to deliver goods to final demand.

The model also generates the actual cost of expenditure involved in abating the pollutants generated by production resulting from the purchase of consumption goods.

Coefficients for the gross residual, net waste and cost of abatement generated by production resulting from purchases of one million dollars by a given final demand sector, such as households also are produced, based on the input-output structure of the economy.

Expenditures for each industry and pollutant type, necessary to meet prospective emission and/or treatment standards are generated.

A final capability available at the completion of the feasibility test indicates the results of an estimation process which yields the amount of additional expenditure necessary to meet prospective standards associated with the production, in all industries, resulting from one million dollars of delivery to final demand by a given industry. These figures could also be taken as an estimate of the percentage increase (expressed in tenths of percents) in the price of the good delivered to final demand, resulting from the additional expenditures necessary to meet standards.

Additional outputs already programmed indicate estimated costs by industry of raising environmental standards, and of changing patterns of growth and consumption. There are in preparation additional programmes and data which will demonstrate the use of EEAAM for the evaluation of improved abatement technology, regional impacts, and benefits and costs of alternative programmes for improving environmental quality.

Two final outputs will be especially critical for overall data control and evaluation of the ultimate generation of residual by production/consumption activities.

In a sense Ultimate Residual Generation is the final output of the EEAAM. It shows the total material emitted to the environment by production processes and by external contractors who treat industrial wastes.

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This total material includes not only gross residual discharged untreated, and gross residual escapements from treatment processes, but also treatment residuals. Many treatment processes simply collect gross residual and alter its form but still eventually release this material to some environmental medium. Although the treatment process, by altering its form, renders the gross residual less harmful, the processed material (EEAAM terminology for this material is treatment residual) is still very likely to have some effect.

IV. Evaluation of EEAAM for Developing a Geographic Strategy of the Environment

The model discussed in Section III, and the data thus far collected, indicate that the completion of the EEAAM is feasible. Given the commitment of needed resources such a model could generate outputs showing the techno/economic-ecological/geophysical linkages for a geographical area. There appear to be both specific and general values associated with such an application of EEAAM.

Specifically, EEAAM could be used to estimate:

1. the gross residuals and net emissions to the environment generated by each industry or activity, and per dollar of output by that activity,
2. the gross residuals and net emissions to the environment generated by each final demand sector and by each dollar of purchases by final demand sectors,
3. costs and benefits of alternative waste treatment processes,
4. priorities in the reduction of environmental damage from each industry by ranking the benefit-cost ratios,
5. comparison of base period data and future projections.

Specifically, EEAAM could identify:

1. new opportunities for recycling and reuse of residual by-products which would otherwise be wasted,
2. alternative and less polluting inputs and processes,
3. possible approaches to common treatment of residual by-products including the possibility of producing new and useful products,
4. opportunities for colocation of residual producers and users to facilitate reuse or common treatment of residual by-products,

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5. for hard-core remaining residual problems not amenable to any of the above treatment alternatives, the alternatives for ultimate assimilation and natural recycling for isolation from the environment could be evaluated.

Specifically, EEAAM could aid appropriate agencies in determining, e.g. cost of abatement to meet alternate standards, allocation of research and development funds to the most critical abatement and recycling needs, projections of anticipated pollution related to alternate patterns of techno-economic development.

Specifically, EEAAM could provide data for the preparation of periodic reports on regional environmental quality and related economic activity analyses.

Specifically, EEAAM provides a model of potential use to support the generation of uniform and consistent data for use in evaluating the environmental impacts of alternate patterns of production and consumption.

In general, the logic of the economic-environmental model developed in this study is based on the assumption that all production and consumption activities in the economy generate directly from their own activities, and indirectly from the activities of their suppliers, a series of impacts upon the environment both from their withdrawals of non-renewable resources and from their emissions of pollutants back into the environment.

The uncritical advocacy by economists and others of growth maximization in an open system as the ultimate policy objective must be thoroughly re-evaluated in the more appropriate conceptual framework of man within the closed system constraints of a fragile and limited environment. Vast new technologies with potentially irreversible global effects should be thoroughly evaluated for environmental impacts before rather than after adoption.

It is recognized that many industries and various agencies of Government involved in environmental affairs already have active programmes for recapturing and utilizing residuals to the extent that practical market economics allows. EEAAM, however, is based on the explicit assumption that a continuing systematic and interdisciplinary review of linkages between producing, consuming, and polluting will reveal previously unrecognized relationships and new possibilities for reducing the net production of waste loads to the various environmental sectors.

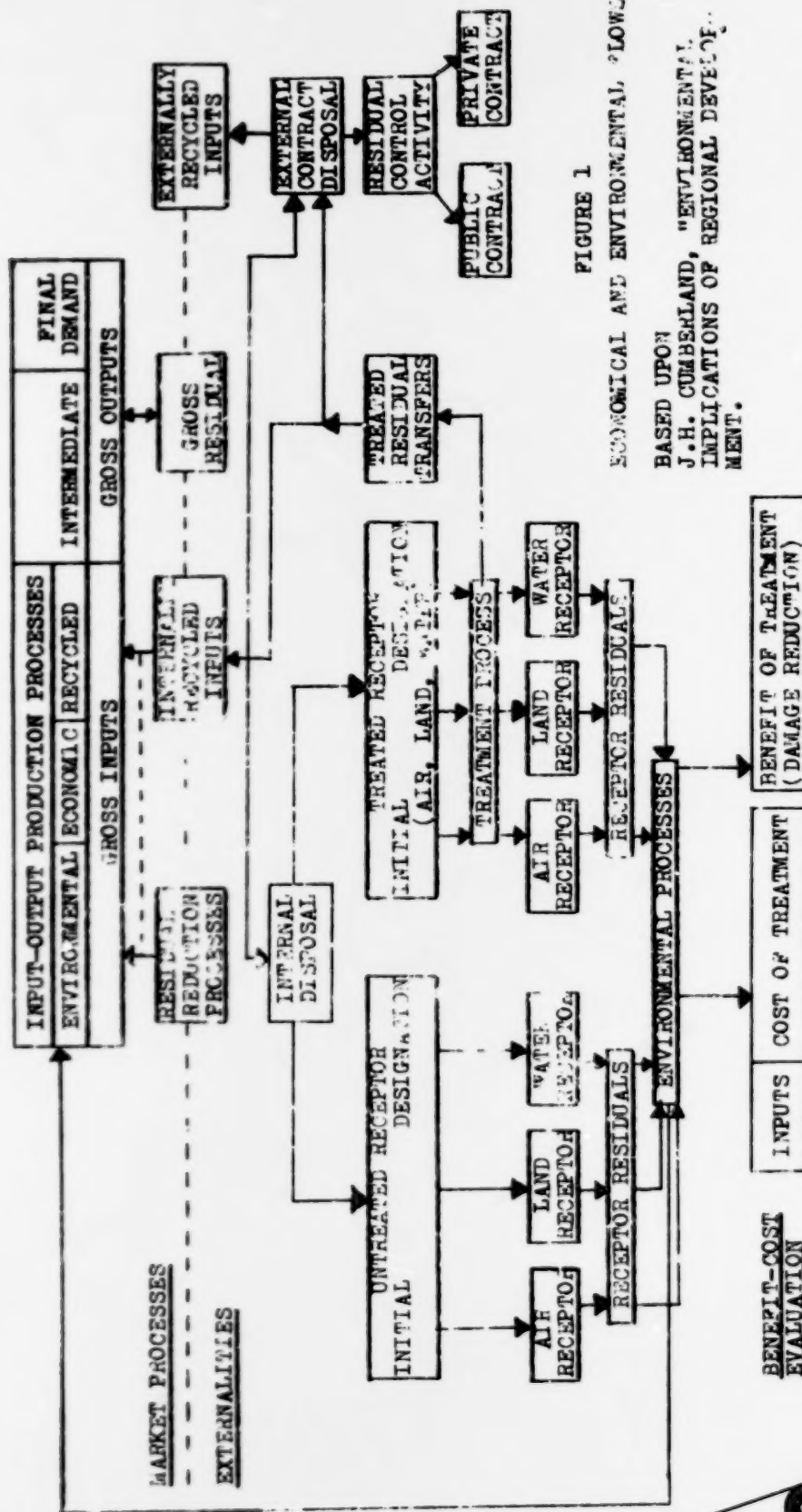


FIGURE 1

ECONOMICAL AND ENVIRONMENTAL FLOWS
BASED UPON
J.H. CUMBERLAND, "ENVIRONMENTAL
IMPLICATIONS OF REGIONAL DEVELOP-
MENT."

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THE DESIGNATION OF NEW TOWNS (UNITED KINGDOM)

The formal process leading to the eventual definition of an area within which a Development Corporation will be charged by Central Government with the responsibility of building a new town is complex. This paper outlines the provisions for local consultations, public inquiry, Parliamentary debate and possibly challenge in the Law Courts before precise boundaries can be determined. It uses the recent examples of Milton Keynes and Central Lancashire New Town as case studies. Given the scale of the proposed developments (with planned populations of 250,000 and 430,000 respectively) and the critical changes in prospective life styles for the existing people in these areas, a rigorous examination of the proposals was obligatory before approval could be granted by the Secretary of States for the Environment.

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2.3 DESIGNATION OF NEW TOWNS

by J. Peake, Urban Planning Directorate, UK Department of the Environment

INTRODUCTION

1. The New Towns Act of 1946 and subsequent legislation, consolidated for England and Wales in the New Towns Act 1965, gives the Secretary of State for the Environment power to designate any area of land, which can include existing towns and villages, as the site for a new town. This paper traces the steps leading to the eventual definition of an area within which a development corporation will be charged with the responsibility of building a new town. It discusses the procedures leading to designation in the context of two recent examples: Milton Keynes and Central Lancashire New Town (see map), designated respectively in January 1967 and April 1970.

2. Given the changes which flow from the act of designation - the years of disruption and the sometimes painful changes from rural to urban life - it is hardly surprising that there is a lengthy process with provisions for local consultations, public inquiry, Parliamentary debate and possible challenge in the Law Courts before the precise boundaries of new town designated areas are finally determined.

3. Closely reasoned arguments must be put forward to justify the proposed size and even the very existence of a new town. These arguments are presented in a "designation report" prepared by professional planners. For the majority of existing new towns this report has been prepared within central government but in five recent instances (one of which, Ipswich, was abandoned) designation reports were prepared as specially commissioned studies from firms of consultant planners. The merits of the alternative approaches are discussed in the paper.

4. Once the decision to go ahead has been taken and the new town designated, a development corporation is appointed having wide statutory powers. These include the right to buy land compulsorily, the restriction of land values for the purposes of compensation, access to government loans and powers concerned with planning and development.

DESIGNATION PROCEDURES

Formal Consultation

5. Statutory procedures begin with the requirement for the Secretary of State to consult with any local authorities likely to be affected by his intention to designate a new town. These include the various levels of local authority in the area and also such bodies as river, water and power authorities. Although they are aware of the proposal through previous informal discussions, statutory consultations provide them with an

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opportunity for putting to the Secretary of State their final considered conclusions on the proposal so that he can decide whether to go ahead with or amend the chosen boundaries. The views of other government departments are also taken into account at this stage - these are likely to relate mainly to matters of public investment, agriculture, industry and employment.

Draft designation order

6. After due consideration of the content of these consultations, a Draft Designation Order is published, advertised and formal notice served on the local authorities concerned; this Order is accompanied by a map and a statement - the explanatory memorandum - giving the reasons for making the order and information on the size and character of the proposed new town.

Public Inquiry

7. A period of not less than 28 days is specified during which objections to the proposed Order may be made. If any objection is made and not withdrawn it is obligatory for a public local inquiry to be held and it is usual to appoint an independent inspector to conduct the inquiry. The inquiry is public and a representative of the Secretary of State attends to make a factual statement and answer questions. All objectors can be heard and may be legally represented. Local authorities, including those outside the draft designated area, which consider themselves affected may also give their views. The Inspector will report to the Secretary of State with recommendations on the objections received and his report will be published at the time of the Secretary of State's decision. Under the terms of the New Towns Act, the inquiry is into the objections; it is unlike a planning appeal where both sides present evidence and cross-examine each other.

Decision

8. The inquiry and subsequently the Inspector's recommendations represent an important part - but not necessarily the decisive part - of the process leading to the decision. At the time of the decision letter the project can be abandoned or a Designation Order made covering all or part of the land in the draft. Frequently parts of the area are excluded to meet objections but no compensatory additions can be made without the consent of 'all persons interested' - a difficult situation to envisage.

9. The final Order is advertised, published and distributed in a manner similar to the Draft Order: there are nevertheless further safeguards for interested parties. If the local planning authority is at this late stage an objector, the Order must be laid before Parliament. Finally, the Order may be challenged by applying to the High Court within six weeks. The Judiciary, however, can only question the decision on grounds of improper procedures.

CASE STUDIES

Milton Keynes

10. The location is approximately midway between London and Birmingham adjacent to the M1 motorway. A new city was first envisaged for this predominantly rural area in 1962, following studies made by Buckinghamshire Country Council. Subsequently, the government sponsored study of the South East region(1) published in 1964 noted that it would be difficult to find an area that would be more attractive to industrialists, and a sub-regional study(2) prepared for government by consultants published in the following year confirmed the feasibility of city scale growth in this area.

11. In March 1965 the Government announced its intention to proceed with planned development in the area using New Towns Act powers. A brief for the new city based on broad strategic issues was prepared within the Ministry of Housing and Local Government: this said that it should provide for the immigration of 150,000 Londoners, it was to be capable of further growth beyond that level and it should be largely self-sufficient in terms of employment. Proposals for a designated area, supported by a technical report, were also prepared in the same Ministry after discussion at official level with the county planning authority, the many statutory authorities concerned with such matters as water and drainage, and with professional officers in other government departments. The technical report recommended 10,720 hectares for designation - an area large enough to both allow for choice of plan form and for future growth. On this basis official consultations were held with all interested parties.

12. Following this, a Draft Designation Order was made in April 1966. The explanatory memorandum commenting upon local authority objections said there was much sympathy with those to whom the prospect of development in agricultural and relatively unspoilt countryside was unwelcome and who urged that the development should take place somewhere else. In the light of the representations a reduction of about 520 hectares was made in the area originally proposed.

13. A public inquiry into objections on the Draft Order was held in July 1966. There were four main groups objecting: a group of local authorities, but not including the county council; agricultural interests represented by the National Farmers Union and the Country Landowners Association; amenity interests represented by the Council for the Preservation of Rural England and, finally, numerous residents of the area.

14. The Inspector reported in August 1966. He accepted the Government policy to establish a new town in north Buckinghamshire to receive 150,000 overspill and reach an ultimate population of

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- (1) The South East Study 1961-1981, HMSO 1964
 - (2) The Northampton, Bedford and North Buckinghamshire Study. HMSO 1965

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250,000, but he thought that the proposal contemplated too low a density of development and an excessive disruption of agriculture. Accordingly he recommended the reduction of the designated area to 7,470 hectares by exclusions on its east and west periphery (see map).

15. The decision was issued in January 1967. The decision letter contained a summary of the Inspector's findings. While not accepting the Inspector's recommendations in their entirety, significant reductions were made in the area designated. If too great an area were excluded, the physical characteristics of the remaining area would dictate that the intended population could be accommodated only in a rigid and constricted urban structure. The areas finally excluded totalled altogether some 1,340 hectares reducing the confirmed designation area from 10,200 to about 8,860 hectares.

Central Lancashire New Town

16. The new town is in the North West region, embracing an area centered on Preston (pop. 107,000), Leyland (21,700) and Chorley (31,200) towns adjacent to the M6 north-south motorway and close to its junction with a motorway connection to Manchester and on or near the main London-Glasgow railway. The need to maximise the potential of central Lancashire has been a constant theme in the planning policies of the Lancashire County Council for almost twenty years. As far back as 1951 they proposed a new town based on Leyland, coupled with substantial expansion of Chorley, to provide reception areas for the dispersal of population from congested Manchester.

17. The proposal for development of the area under New Towns Act procedure was put forward by the Government in February 1965. The announcement emphasised twin objectives: help with Manchester's housing problems and industrial revival in the North West. The project became a part of the proposals outlined in the regional study(1) published in 1965 and thereafter it has remained an essential part of the planning strategy for the region.

18. In this case the Minister appointed planning consultants to advise him and he gave them a two-stage work programme:

- (i) within 12 months to advise on the area to be designated for development under the New Towns Act 1965;
- (ii) after a further 15 months to produce for the Development Corporation a draft master plan.

(1) The North West. A Regional Study. HMSO 1965.

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In the terms of reference it was pointed out that the region needed further economic growth to create the prosperity which would halt the drift of population to other parts of the country and to assist in eradicating the ugliness and obsolescence of much of its environment which lay at the root of many of the region's problems. Three questions were posed - first, was growth of the pace and magnitude proposed (150,000 in 20 years) feasible in this part of the North West? Secondly, if it were, what form should it take? Thirdly, what, in relation to this form, should be the size and shape of the area designated?

19. The consultants were given a study area within a broad band of territory embracing Preston, Leyland, Chorley and several smaller settlements and in addition to being asked to take account of four major criteria which the ultimate master plan would be expected to satisfy, they were specifically enjoined to propose areas for designation which took account of:

- (a) the relative agricultural values of land;
- (b) existing amenity and landscape values;
- (c) the presence of any workable minerals;
- (d) stability of the site and the presence of underground workings.

20. The consultants completed their designation report(1) in January 1967. They decided that the project was feasible and proposed a city of linear form, based on the existing units of Preston, Leyland and Chorley. The area proposed for designation was 20,800 hectares - to accommodate a 1991 population of just over 500,000. But the published report was criticised from two standpoints. On the one hand nearby towns in the Calder valley to the east, which were suffering from outworn physical fabric and were only slowly recovering from a heavy reliance on declining industries saw their future prosperity threatened by the proposed new town. On the other hand there was also criticism aimed at the threat to attractive countryside and good agricultural land to the north east in the direction of Longridge (see map).

21. As a result of the fears expressed in the Calder valley towns it was decided that the wider impact of a development of such a magnitude should be more fully evaluated before proceeding with the Draft Designation Order. The subsequent 'Impact Study' prepared by the same consultants showed a mixture of advantages and disadvantages but suggested that there were insufficient adverse factors to outweigh the long-term arguments in favour of proceeding with the development(2).

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- (1) Central Lancashire: study for a city. HMSO 1967
 - (2) Central Lancashire New Town proposal: Impact on North East Lancashire. HMSO 1968.

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22. A Draft Designation Order was eventually made in December 1968 for 16,600 hectares. The accompanying explanatory memorandum noted the objections and representations. The Minister had accepted the linear form suggested by the consultants and the arguments in favour of including the Longridge Spur - namely the opportunity to provide a high quality environment in the new city. But, in discussion with the consultants, he had reduced the total size of the area by excluding those peripheral zones which served mainly as green belts.

23. The public inquiry was held in May 1969. Major objections still related, as might be expected, to the adverse economic impact on the Calder valley towns and to the importance of the Longridge Spur for agriculture and amenity. While accepting the case in principle for the new town proposal the Inspector was extremely critical of the disposition of the area to be designated. In particular, he suggested that an extension towards Blackburn in the Calder valley seemed in broad terms as suitable as the Longridge Spur and might bring benefits to North East Lancashire.

24. The Minister's decision letter was published in March 1970. Although not convinced of the suitability of the area proposed by the Inspector as an alternative for extension he decided to exclude from the area parts of the Longridge Spur as well as some other land, amounting in all to about 2,300 hectares. This resulted in an adjustment in the proposed population intake - justifiable on grounds of currently reduced projections of the regional population. The total area finally designated, amounting to about 14,200 hectares, was thought to be sufficient to accommodate a total population of some 430 000.

Commentary

25. The similarity between the origins of the two towns is immediately apparent. Both histories began with an identification by county planning authorities of locations where growth of population and associated employment were considered feasible, followed by a period of interaction between local and national planning interests and eventually a Government decision to proceed with planned growth under the New Towns Act. It was in the period between announcement of the intention to proceed with a new town and the Draft Designation Order that the history of events varied. Thereafter, mainly because of procedures governed by statute, consultations, public inquiry and decision, they followed a similar pattern.

26. Milton Keynes was the last of the new towns for which the pre-designation technical report was not only prepared by government officials, but also remained unpublished. For the Central Lancashire New Town far more time and resources were

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devoted to this part of the process and the designation report proved to be informative to the public generally as well as the key document in the pre-designation consultations. The published document was a clear and well illustrated exposition of the area studied, its potential for development and of the theoretical basis for the proposed urban form.

27. Another feature of the approach in Central Lancashire was the decision to give to consultants the responsibility of preparing both the designation report and the master plan. This has allowed the incorporation in the designation report of the first stage of the master plan thinking. The designation diagram became in effect, an interim stage of the master plan - a deliberate statement of what was in the mind of the town designer - presented at the earliest possible opportunity.

28. The statutory consultations with local authorities reflect the roles of the different tiers of local government. Both county council and county borough councils usually serve populations of 100,000 upwards and are statutory local planning authorities, well able to grapple with the planning and financial consequences of designation. Studies within the county councils of both Buckinghamshire and Lancashire gave rise to the proposals for planned expansion which culminated in designation. Serving large populations and extensive areas, they were able to take impartial views of the broader issues and pressures and were in positions to envisage 'sacrificing' a part of their territory for the good of the whole. The smaller local government units, urban and rural district councils, and parish councils, are nearer grass roots level and more influenced by local feelings. Conflicts of interest emerging at the consultation stage between the various tiers in approach to new town proposals normally persist to the stage of the public inquiry.

29. Both case studies demonstrate the strength of opposition by amenity and agricultural interests and the resulting pressures to reduce the area of land proposed for designation.

30. The value of consultations and inquiry procedures in influencing decisions and indicating the strength of objections is considerable. Nevertheless, in view of the vital role of new towns in national/regional planning strategies, the final decision on designation must remain with the Secretary of State. The process allows the Secretary of State to be fully informed of the views of all affected parties but it is only he who can weigh these views against the needs of the prospective residents of the new town. Therefore procedures necessarily make designation a consultative rather than a participatory(1) process.

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- (1) The Skeffington Report (People and Planning. HMSO 1969) draws a distinction between participation and consultation. It defines participation as the act of sharing in the formulation of policies and proposals and taking an active part throughout the plan-making process.

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The contrast between procedures leading up to designation and the circumstances prevailing after the appointment of a Development Corporation are significant. Once a Development Corporation is in being a different atmosphere can be discerned: a psychological hurdle has been leapt. The area is, by then, committed to expansion and there is a responsible body committed to making that expansion a success.

CONCLUSION

31. The new towns and associated green belt policies represent a desire to create and maintain a balance between a satisfactory urban environment for a growing population and conservation of the countryside. The wide public acceptance of the new towns programme lies in a general regard for amenity, i.e. pleasant surroundings, urban or rural, which may be peculiarly British. The new town concept continues a tradition with roots in the social and moral concern aroused by urban conditions stemming from the industrial revolution but it is impossible to quantify the success of the programme in terms of these origins alone. The designation of new towns to foster a variety of ends, and the fact that other measures of achievement have been used, e.g. movement of people and jobs, obscures the overall concern for amenity which, it is suggested, underlies the whole. It is therefore appropriate that this concern, expressed as the balance between land needed for urban development and that lost from the countryside, should loom so large in designation procedures.

32. By the slow process of consultation and inquiry the most attractive and agriculturally valuable areas of countryside can be avoided. Preliminary planning studies before designation allow a site to be selected which will provide adequate opportunities for pleasant urban development and which, in some cases, offer opportunities for the removal of dereliction as part and parcel of the new town's growth. Finally, the act of designation defines the limits of the town and correspondingly relieves urban pressures on the surrounding countryside. After designation the Development Corporation and local authorities will have joint concern for the quality of the created environment.

33. The most significant factor emerging from this account of designation procedures may be the interrelationship of collective urban and rural interests in a highly urbanised country. The ideal of better towns and conservation of the countryside provides common ground. There might also be a general appreciation that local interest must suffer to obtain an overall improvement in amenity but there would be increasing pressure to seek full justification for this. Higher level decisions are desirable subject to checks by powerful organisations representing environmental interests outside the government. The existence of such bodies as the National

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Farmers Union and Council for the Preservation of Rural England is vital in this respect: designation areas would not receive such impartial consideration without their presence. To the planner it may seem that his larger strategic concerns or his vision of the new community is lost within the later designation procedures but the concern for amenity and the rural economy may more realistically reflect public interest at this stage. The public is aware that visible countryside is at risk and is not to be easily satisfied that it will be replaced with a new Jerusalem.

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NEW TOWNS



2.3.10

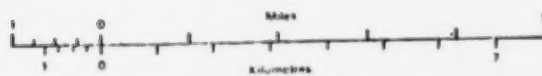
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MILTON KEYNES NEW TOWN



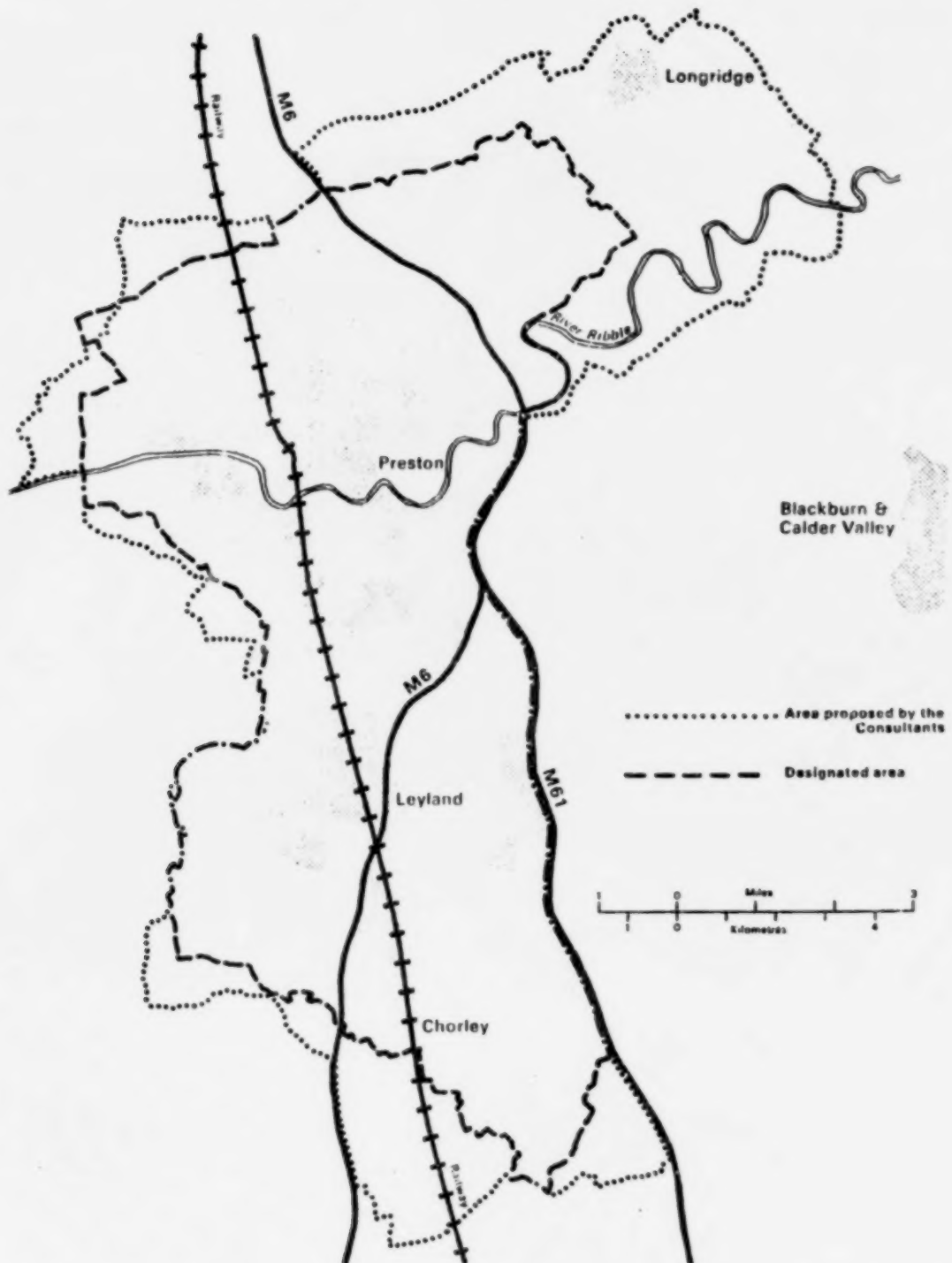
Draft Designated area

Designated area - - - - -



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CENTRAL LANCASHIRE NEW TOWN



2.3.12

ESTUARY DEVELOPMENT : FEASIBILITY STUDIES : HUMBERSIDE AND
SEVERNSIDE (UNITED KINGDOM)

Increased use can be made of feasibility studies to explore potential longer-term conflicts and clarify major development opportunities - particularly at the regional and sub-regional scale. This paper shows the way in which the translation of generalised ideas into quantifiable terms can help to identify major environmental and economic issues and provide a basis for informed public debate.

Recent experience in Britain indicates the value of commissioning these studies at an early stage of the planning process when broad options can be tested for sensitivity to socio-political preferences. It suggests that only after such tests have been made does it become appropriate to commission more sophisticated evaluation exercises or more elaborate model-building processes.

2.4. FEASIBILITY STUDIES: HUMBERSIDE AND SEVERNSIDE

United Kingdom, Department of the Environment
by Mr. S.W. Smith : South East (Professional) Directorate

INTRODUCTION

1. Implicit in Theme III is the notion that conflicts arise between society's expanding material needs and its less tangible desires for a good natural and man-made environment. A planning feasibility study, by ranging beyond short-term and closely predictable probabilities, may anticipate such conflicts and show what would be involved in reconciling them or in avoiding them altogether.

2. In the United Kingdom, three regional-scale feasibility studies have been recently completed covering Tayside(1), Humberside(2), and Severnside(3). The location of these Study Areas in relation to the existing distribution of the country's urban population is shown in the sketch map. This paper is based on the Humberside and Severnside studies both of which were prepared under the same auspices. The purpose of these two studies was to report on the possibilities for accommodating very large population increases over the period to the end of the century, in areas which were away from and could relieve problems in the most heavily urbanised and congested parts of the country. In the case of Humberside, the area studied covered nearly 3,000 sq. kms. with a population of about 0.77 million; the main existing towns were Hull (350,000), Grimsby/Cleethorpes (130,000), and Scunthorpe (70,000). Severnside comprised an area of over 5,600 sq.kms. with a population of 1.68 million and included the city of Bristol (540,000) and the large towns of Bath (100,000), Gloucester (100,000), Cheltenham (90,000) and Newport (120,000).

GENERAL BACKGROUNDNational population growth and land requirements

3. The decision, made in 1966, to embark on these studies was a response to successive increases in estimates of the scale of the country's future development needs. An up-turn in birth rates had begun in 1954 and persisted for a whole decade over which period it was accompanied by some large net gains from international migration. These trends were reflected in national population projections. Those available in 1966 suggested an increase of 18 million for the period 1965-2001, as against the latest projection which gives an increase of 11 million for the period 1969-2001. At the same time a greater understanding was developing of the complexities and long-term nature of the over-spill problem, which is widespread in Britain's large cities and towns, the general picture being one of continuous outflow of population from the existing fully developed urban areas mainly

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- (1) Tayside. Potential for Development. HMSO 1970
 - (2) Humberside. A Report by the Central Unit for Environmental Planning. HMSO 1969
 - (3) Severnside. A feasibility study. HMSO 1971.

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into surrounding and rapidly expanding metropolitan areas or "city regions". These movements can be very large, for example, since 1951 the net migration loss from the administrative area of Greater London has been more than 1.3 million with the rate of net outward movement accelerating and currently running at over 90,000 a year.

4. It is now estimated (see Table) that around 700,000 hectares will be required for urban development by the end of the century. This represents an increase of two fifths in the existing developed area and is more or less inevitable - fluctuations one way or another in future population growth rates or in per capita demands for space can do little more than vary slightly the length of the period over which these increased land requirements will be realised.

Urban areas and populationGreat Britain 1900-2001

Year	Population (millions)	Urban Area		
		Total (thousand hectares)	Hectares per 1,000 population	Per cent of total area
1900	37.00	868	23	3.8
1935	45.60	1,264	28	5.6
1955	48.92	1,628	33	7.2
1966	53.18	1,892	36	8.3
2001	64.50	2,600	40	11.4

In the light of these circumstances it appeared to be no more than prudent to take steps to explore whether advantage could be taken of possible opportunities for meeting a larger proportion of the country's development needs elsewhere than in the city regions that were expanding around the existing conurbations.

5. Also, by 1966 new ideas were gaining ground concerning the nature of the planning process; these were to lead to the passing of the Town and Country Planning Act 1968. Up till then the approach had been by way of a linear process of survey, analysis and plan. The centre-piece of the system, which is now to be gradually phased out, was a highly formalised land-use plan approved by the Minister under seal following quasi-judicial inquiry proceedings. Quinquennial reviews were obligatory and

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there were statutory "departure" procedures for handling proposed developments which were not catered for by the approved plan. The whole system was conceived within a strongly legalistic framework stemming from the 1947 Act. The new, and by now generally accepted, cyclical process involves:

- (i) study, leading to initial identification of problems and objectives;
- (ii) delineation and testing of options;
- (iii) formulation and evaluation of alternative strategies;
- (iv) preparation of "structure" plans within the framework of the preferred strategy;
- (v) preparation of local plans and programmes for implementation;
- (vi) monitoring goal achievement; continuous development and adjustment of strategy and plan.

With this new approach it became possible clearly to identify the feasibility study as a component of the planning process, its main purpose being to identify the practicable development options for the Study Area (item (ii) above).

The Study Areas

6. While the Humberside and Severnside feasibility studies were occasioned by national pressures to seek new areas for expansion, the choice of the two estuarial sub-regions rested on combinations of local factors.

7. On Humberside deep water and extensive areas of flat land had attracted a number of large chemical plants in the 1950's and there had been major expansion at the Scunthorpe steelworks; in the mid-1960's decisions were taken to build two large oil refineries on the South Bank. These developing estuarial industrial sites are backed by wide areas of thinly populated mainly arable land, much of it extremely well farmed in very large units but prima facie physically easy to develop. Further inland are the attractive landscapes of the York and Lincolnshire Wolds; beyond these the flat lower valleys of the Trent and Ouse river systems are generally below high tide levels. The general image was that of an area with modern port facilities, an expanding industrial base and plenty of space for major urban growth.

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8. Severnside was already an area with thriving cities and large towns and with a New Town at Cwmbran nearing completion. The area generally seemed to have a wide industrial and commercial base with engineering, aero-space and other modern industries and a large pool of highly skilled labour. At Newport the brand new Spencer Steelworks was just coming into production. National firms were establishing and expanding offices in the main towns. The motorway M5 from the Midlands and the M4 from London, both now nearing completion, intersect just north of Bristol; and in 1966 the Severn Bridge was opened. The whole is set in some of the most outstanding landscape in the country - the Study Area embraces the Cotswolds, the Mendips, the Forest of Dean and Wye Valley, and the fringes of the Brecon Beacons National Park. The basic question here was whether the growth which important parts of the Study Area was attracting was well based and whether there were opportunities to latch on to this by increasing growth rates to levels where they could contribute significantly to meeting national problems. And, germane to this theme, a central issue in this particular Study was whether even present levels of growth could be sustained without impairing the area's main natural attractions and its heritage of historically interesting and attractive towns and villages.

Institutional arrangements

9. The announcement by the Government in 1966 that studies were to be undertaken of Humberside and Severnside came as no particular surprise, for the potential of these two areas had been widely discussed and canvassed for some years in local government and academic circles and by various pressure groups. An important function of the officially sponsored studies was therefore to translate already publicized general ideas into quantifiable terms and to identify and clarify the environmental and economic issues which would attend their adoption. Thus, although it has to be stressed that a feasibility study is not a plan, both studies have given prominence to their attempts to quantify the possible scale of growth and to illustrate the possible locations and extent of the necessary land-take. Admittedly this has involved making some bold assumptions but it is difficult to see how informed public debate could have been induced by any more abstract approach, however elegant.

10. The role and scope of these two feasibility studies to some extent dictated the choice of institutional arrangements for carrying them out. Firstly, the very context demanded a demonstrably neutral approach. Secondly, as with any major study where the development of possible options would be strongly conditioned by externalities, it was necessary to have access not only to national sources of data but to national policy formation areas. Thirdly, if the study was to be a practical one, it was essential to have good basic information on the state of the local urban infrastructure - transport, utility services, housing conditions, etc.

11. These requirements led to the setting up of what were then novel arrangements for carrying out the Humberside Study and these were subsequently repeated for Severnside. The study was assigned to a London based group of central government officials, designated the Central Unit for Environmental Planning (CUEP). It comprised officials from Departments involved in regional planning - Economic Affairs, Trade, Employment, Housing, Transport etc. together with, in the case of Severnside, the Welsh Office. These part-time members retained all their departmental responsibilities but their contributions to the CUEP were not held to commit their departments. The CUEP also had a small full-time professional cadre consisting of an economist, a statistician and a physical planner, the latter also having direction of full-time Physical Planning Units stationed in each of the Study Areas. These units were manned by professional staffs - planners, architects, engineers and surveyors - on loan from the local planning and highway authorities in the Study Areas. An important feature of the whole apparatus was that it had links in many directions within central and local government but it was composed and operated solely as a body of officials. The local government officers in the Physical Planning Units were explicitly answerable only to the CUEP: they were not appointed to represent the viewpoints of their employing authorities. Also there was a clear understanding from the outset that during the course of the study, neither the Physical Planning Units nor the CUEP would carry out any consultations with the local authorities: contacts were confined to obtaining data and information. The CUEP itself was afforded a quasi-independent status submitting its reports to Ministers (currently the Secretary of State for the Environment) who, in authorising publication, would be free to do so expressly without commitment.

Status of Study findings.

12. Thus everything has been done to present these feasibility studies as independently produced consultation documents, notwithstanding their unmistakable official stamp. Experience with the published Humberside Study does not so far suggest there has been any serious misunderstanding over this. Publication was under cover of a government statement inviting views and comments from local authorities, the Regional Economic Planning Councils, and the public. After the consultation period it is open to Government to accept, endorse or disown all or any part of, the findings. Any statements are, however, designed to be in a form which will assist the regional councils and the local planning authorities to proceed with the formulation and evaluation of strategies and the preparation of structure plans.

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THE NATURE OF A FEASIBILITY STUDY

Concept and interpretation

13. An across the board feasibility study of the type commissioned for Humberside and Severnside is essentially an open-ended operation conceptually different from the finite type of exercise involved in locating and planning for a specific project - a new town or airport, or an agreed level of expansion within a defined area of search. Put simply, a feasibility study ought to answer the questions whether, when, where and how to provide for growth; at what scale; and over what period. In the case of exercises on the scale of Humberside and Severnside the findings ought ideally to afford comparisons with other national opportunities for coping with population and economic growth.

14. Inevitably, the CUEP were obliged to confine themselves to strictly manageable areas of investigation. With both studies two parallel but interlocking lines of inquiry were pursued. The one treated the availability of developable land as a primary locational factor. This involved making assumptions at the outset about the characteristics of urban development and its land requirement over the long term. Also, a series of criteria were devised to test (not evaluate) the suitability of possible areas for development. Incidentally, these were clearly stated so that the recipients of the report would themselves be in a position to form alternative judgments. The parallel line of inquiry was focussed on economic feasibility. This, in the main, was equated with possibilities for providing various levels of employment necessary to support population growth.

15. The two lines of investigation were then brought together and a range of physical and economic development options was synthesised. In neither study did this fusion of physical planning and economic inputs throw up particular difficulties or produce irreconcilable conflicts. The main problem was in bridging the gap between the long-term time-scale of physical planning and the short-term nature of economic forecasting. But, as could be expected, there were acute problems in handling prospective costs and benefits. In the event, neither Study succeeded in quantifying the benefits which could occur from expansion - either to the Study Area itself or to other parts of the country. Hence, all the Studies claimed to show was whether, and in what circumstances, major expansion could take place, not whether it should.

16. A debateable aspect of feasibility studies concerns the way they can, or should, deal with costings and evaluation. In its early days the CUEP sought to place considerable emphasis on these elements. Subsequently, though it has been concerned with tests of feasibility and, in general terms with costs, it

has tended to see relatively sophisticated evaluation exercises as more appropriate to post-feasibility study stages. In other words it has sought to place the feasibility study more firmly at stage (ii) of the planning process as set out in paragraph 5 above, and to avoid involvement in stage (iii). This shift of emphasis has been only partly dictated by the CUEP's own lack of time and resources to undertake increasingly elaborate investigations.

The economic base

17. There were significant cost differentials related to the strength and prospects of the Study Areas' existing economies. On Humberside the economic diagnosis suggested that there would be little or no indigenous growth of employment to sustain a population expansion; and the new industries in the pipeline were wholly capital intensive. The financial costs of attracting new employment to the Study Area were assessed mainly on the basis of the considerable experience available in the United Kingdom of inducing industry to move to Development Areas. These estimated costs were far and away the largest item in the balance sheet for Humberside.

Development costs

18. As it happened, with both Humberside and Severnside it was possible, even with rigorous application of tests of suitability for development, to identify large areas of first-class building land where there would be little difference in likely construction costs between one site and another or in the costs of supplying utility services. These services, in descending order of their capital cost, are sewerage, electricity, telephone and postal services, gas and water; together they normally account for about a seventh of the total capital cost of urban development. The most costly of these - sewerage - was an important factor influencing the CUEP's selection of land and was fairly thoroughly investigated so that areas where total drainage costs might be high in relation to the population to be served would have been excluded in any case. The findings as regards provisions of community services, mainly health and education, were similar. The one clear differential development cost on Humberside arose from the fact that it was evident that land of above average agricultural quality would be taken if there were large-scale growth, but in any conventional economic evaluation this could not be a decisive factor.

19. In short, it was difficult to demonstrate in either Study Area that site considerations or location would produce development and construction costs different to those applicable to good building land anywhere else in lowland England. But there were important differences in the time which would be needed to provide local infrastructure and services and to improve inter-urban communications: these played a part in the decision that early expansion in Humberside was not feasible.

Impact costs

20. There remains for consideration the rather more intangible question of the costs of what might loosely be described as the "impact" of large-scale urban growth on the Study Area generally, and, in particular, on the countryside, the transport system, and on existing central areas.

The Countryside

21. The problem with assessing impact on countryside was lack of an operational methodology. There are many facets of this but throughout there is the basic difficulty of how to measure intangibles. Not only is it difficult to find a common basis for comparing, for example, the current commercial value of a mineral deposit with the aesthetic pleasure derived by people who admire a natural landscape, but there is the added complication of attempting to place a value on a natural asset which, once destroyed, could never be replaced. The simple financial concept of 'present value' used in cost-benefit analysis does not take account of social responsibilities for conserving for succeeding generations assets of natural beauty, which, with land a finite commodity, are likely to assume ever increasing value. Consequently, in both Studies, areas of high landscape value etc. were treated as absolute constraints against any future spread of urban development and were thus, implicitly, accorded a very high value.

22. As regards the "impact" problem, both Studies had to be content with a consensus judgment that the scale of growth which could be contemplated would not lead to intolerable pressures on the countryside and on wildlife. But a warning note on the possibility of longer-term conflict, were rapid growth to continue indefinitely, had to be sounded in the Severnside report. Clearly there is a need to develop measurement techniques and it is of interest to note that the Countryside Commission has been making some progress in this area and is currently seeking to launch a first regional exercise in South East England.

Transportation

23. With transport, on the other hand, there is considerable experience with the use of predictive models and one of these was used in the Numberside Study in an attempt to carry out a preliminary evaluation of the traffic implications of alternative development strategies. Four different outline schemes for accommodating a population increase of 1 million over the period 1966-2001 and for locating the main industrial and central areas were prepared. For each scheme the number of journeys per day expected between each of 70 zones was calculated by a computer programme using assumptions about the distribution of population

and employment and about car ownership, the quality of public transport and vehicle occupancy. A second computer programme was used to assign the zone-to-zone vehicle movements to the basic road networks produced intuitively for this purpose for each scheme.

24. The final output gave estimated patterns of vehicle movements for 1981, 1991 and 2001, together with estimates of the capital costs of main road and junction construction and of daily operating costs, taking into account the running costs of vehicles and the value of the occupants' time. The computer outputs were then consolidated to provide comparative costs for each of the hypothetical sketch plans. The capitalised operating costs (discounted back to 1981 at 8%) were estimated to be about ten times as large as the similarly discounted estimated capital costs of building the roads. Taking the capital and operating costs together, the differences in per capita costs of the alternative schemes appeared remarkably small and, having regard to the wide assumptions and the techniques used, were not felt to be statistically significant (though the model had been helpful in elucidating the particular problem of the estuary crossing).

25. Seen in retrospect this may not appear a surprising result and could well have derived from the relative coarseness of the input. But it raises doubt about the usefulness of introducing this type of transportation model at this stage of the planning process where, in any case, so many of the necessary inputs can only be pure assumptions and where there is an almost infinite range of variables - scale, pace and type of growth, development and transportation options, etc.

26. This type of exercise was not, therefore, repeated for the Severnside Study. Instead, arrangements were put in train for setting up land-use transportation models which the local planning and highway authorities could employ after the options identified in the feasibility study had been through the political and public participation sieves which would follow publication. At that stage there would be opportunity to develop selected *prima facie* acceptable options to the degree of detail necessary for proper investigation by Land Use Transportation techniques.

Central Areas

27. The Severnside Study took a basically similar line to that on transportation with regard to the problem of assessing the impact of different forms of expansion on central area shopping. A methodological study was commissioned, and a report will be made freely available separately from the main Study. In this shopping study a mathematical model was set up for the Study Area and calibrated. It was then run as a predictive

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model using, for demonstration purposes, four alternative development and central area strategies derived from the options identified in the main Study. The main object has been to assess the usefulness of the model both as a forecasting and as an evaluation tool and to provide advice to the local authorities on the form of any additional work which might be undertaken within the Study Area after the feasibility study has been published and discussed.

RETROSPECT

28. At present no further major feasibility studies at the national scale are contemplated: the Humberside and Severnside Studies have still to be digested and there is no obvious need or opportunity for such investigations in other parts of the country. This may, therefore, be a suitable point to make a preliminary assessment though it is too early to judge any results.

29. As regards the Humberside Study a government statement will follow the consultations that have taken place upon it. In spite of the enthusiasm and expectations which attended the launching of this Study the CUEP's neutral position enabled it to advise against any expansion in the 1970s and for deferring any major policy decision on the longer-term possibilities. It advanced a variety of reasons, both internal and external to the Study Area, for taking a line which was noticeably less optimistic and demanding than is, perhaps, normal with planning reports. However, although the report was lukewarm about the prospects for early expansion, its main findings have already found a place in planning policies for the area. Parliamentary powers necessary for implementing the report's recommendation that a bridge should be built across the estuary by 1976 are being obtained(1). The economic findings in the Study turned out to be wholly compatible with the Hunt Committee's report(2) which was published at about the same time: the north bank area now has the status of an "Intermediate Development Area" which will help to sustain and develop its economy so that at least the option of inducing expansion can be left open. In addition, schemes are now well advanced for radically improving the east-west road links to the area and for increasing water supplies - these would probably have occurred anyway but they have been given a more secure context by the feasibility study.

30. The Severnside Study revealed a very different situation as this area has rates of population growth well above the national average. If this growth continues, as seems likely, the area will face considerably local planning problems. Accelerated growth to take a greater share of the national population increase would accentuate these problems. The report outlined the main planning options. It will now be considered by the authorities in the area and should in any case provide useful material for them in dealing with their own planning work.

(1) Humber Bridge Act 1971

(2) The Intermediate Areas. Report of a Committee under the chairmanship of Sir Joseph Hunt. HMSO 1968.

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31. As yet there has been no reason to question the merit of joint working between central and local government officials. This method has since been developed to cover the preparation of a sub-regional framework for structure planning in South East England(1).

32. The feasibility studies will have contributed the first material steps to building up a national inventory of major development opportunities. This could be of value when national decisions have to be taken on locating specific major projects; but the main objective has been to provide part of the nexus of information for central government on which it could base its strategy for influencing the distribution of the national population in the longer-term.

33. One of the difficulties in this context has been the lack of any comprehensive information about the costs, or benefits, of development in areas of Great Britain outside the Study Areas. Insofar as it has been at all possible to derive cost estimates covering the development options disclosed by the two feasibility studies, these have therefore, been expressed by comparison with those which would apply to a theoretical "minimum cost" site. This was a notional area where each of the possible elements of cost is as low as it could be anywhere else in Britain. As already stated (paragraph 16) neither Study has explicitly quantified possible benefits though a number of the findings inevitably contain implicit recognition of their importance.

34. As far as the overall planning process is concerned the experience from these feasibility studies suggests that efforts directed to the stage where the development options are formulated should not be skipped. Firstly, quite apart from reservations which are being voiced against the efficacy of available evaluation techniques, or perhaps more justifiably against their too-wide-ranging application, it does seem that premature commitment to the detailed evaluation stage can create a situation where the evaluation processes, with their insatiable demands for input data, tend to take command. This can lead to inflexibility in planning, and indeed, in attitudes, which is a state of affairs to be avoided at all costs where planning is being operated within a democratic society and market-oriented economy. Secondly, it is when the options are being framed that the public reaction should first be tested. Thirdly, the wisdom of planning via a fully elaborated and inflexible long-term grand design must be questioned. While much of the development initiative lies outside the province of the plan-maker the taking of decisions on development proposals may well be more efficient where these can be seen in relation to a set of options derived from a thorough study of alternatives. Finally, it is only by looking beyond the relative certainties of the medium-term, which alone qualify for inclusion in a detailed plan, that the opportunities for avoiding the risks of major conflict between future developments and the environment can be demonstrated.

(1) Strategic Plan for the South East. Report of the South East Joint Planning Team. HMSO 1970.

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THE IMPACT OF MUSHROOMING DEVELOPMENT ON NEIGHBOURING RURAL
AREAS : THE CASE OF THE METROPOLITAN AREA OF AIX-MARSEILLE
(FRANCE)

The rapid urban sprawl now occurring in many countries throughout the world is often most noticeable in the immediate vicinity of existing centres of population. Such growth upsets the balance of these areas and frequently leads to their deterioration if preventive methods are not taken; a haphazard "sub-urbia" spreads like a rash.

The problem is perhaps more critical at Marseilles-Fos in France than elsewhere, since the growth of this Mediterranean city is taking place in a vulnerable and at the same time attractive environment.

French regional development policies aim at offsetting the fast growth of the Paris area by deliberately stimulating and strengthening those strong points in the urban network of the provinces, the large cities, with their wide spheres of influence and varied amenities.

On a more limited geographical scale, the large city, which is a concentration of urban districts separated by rural areas, is a prime factor in any imaginative regional development policy. It provides a far more accurate and complete picture of the impact of rapid urban spread on the quality of the environment than does the isolated city or town.

3.1 IMPACT OF RAPID GROWTH AREAS ON ADJOINING RURAL REGIONS : METROPOLITAIN AREA AIX - MARSEILLES

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1. COUNTERWEIGHT CITIES AS A FACTOR OF REGIONAL DEVELOPMENT AND RESPONSIBILITY

The rapid urban sprawl now occurring in many countries throughout the world is often most noticeable in the immediate vicinity of existing centres of population. Such growth upsets the balance of these areas and frequently leads to their deterioration.

The problem is perhaps more critical at Marseilles-Fos in France than elsewhere, since the growth of this Mediterranean city is taking place in a vulnerable and at the same time attractive environment. This makes the problem more acute and easier to describe.

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The large city, which is a concentration of urban districts separated by rural areas, is a prime factor in any imaginative regional development policy. It provides a far more accurate and complete picture of the impact of rapid urban spread on the quality of the environment than does the isolated city or town.

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Rapid population growth is the result of immigration from outside the region and its effect is often to drive out the local rural population. When this happens another slice of countryside becomes deserted and is left wide open to urban encroachment which often takes the form of haphazard development and leads naturally to the abandonment of land and the disfigurement of the landscape.

The Marseilles area probably provides the best example in France of industrialisation being energetically promoted in the most attractive, sought-after and vulnerable of natural environments.

The attraction of the Marseilles area has, in fact, become one of the chief factors in its development. The area receives some 35,000 new inhabitants each year although the creation of new jobs cannot keep pace with the corresponding demand. Two features are characteristic of the developable zones around Marseilles; a largely spontaneous urbanisation and Government-inspired industrialisation. Under regional plans, Marseilles, once it is renovated, reorganised, decentralised and outward-looking, will become the focal point for the development or consolidation of large townships corresponding to specific geographical areas and possessing all the facilities necessary for future industrial implantation. The area's centre of gravity will move westwards (to Fos, where a vast port industrial complex is being created) and this shift will have to go hand in hand with a strengthening of the links with Marseilles itself if the development is to be successful. The type of relationship to be established between towns and new urban centres will require fast and comfortable means of transport. This presupposes that nothing be done to harm the tracts of countryside separating the areas to be urbanised. Any ribbon building along the roads would be just as much a blemish on the landscape as a hindrance to the development of close links between the towns. In such a setting, towns and agricultural land, nature and industry involve at different rates whilst remaining interrelated. How does this image compare with what is happening in the Marseilles area? The problems are reviewed in the four next paragraphs.

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2. SURBURBAN SPRAWL

According to forecasts, the industrial expansion planned for the Marseilles area will entail an increase of some 500,000 inhabitants between 1970 and 1980. This means that 50,000 persons, roughly the population of the neighbouring town of Aix, will have to be accommodated each year.

The problem is to avoid the drawbacks of high population density which would cancel out the benefits of the outdoor life afforded by the climate. Furthermore, high densities must be planned with the utmost care so as to avoid the impression of a loss of privacy while at the same time taking advantage of the very real benefits afforded by communal amenities and the possibility of being able to get away to the country. If this is not done, high densities lead to housing problems and traffic congestion and an urge to escape to a weekend bungalow or even to take up residence outside the town. The results of this can be seen outside most large cities, where the rural fabric has given way to

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built-up areas which lack proper amenities and whose buildings - often makeshift - ruin the countryside and, by fencing it off, deprive townsfolk of access to it. Certain factors peculiar to the Marseilles area make the problem even more acute there.

The sunny climate has the disadvantage of making life uncomfortably hot in the new districts, where the lack of parks and gardens is keenly felt, especially by children and elderly people. There is obviously a difference in value between agricultural land and the "garrigue" (Mediterranean scrubland), which means that while it is fairly difficult for a private person to buy a plot of agricultural land and obtain a building permit, this is not the case when the land has no apparent use. The municipal authorities then find difficulty in refusing permits. This is an important factor in the Marseilles area because the arable land is in the low-lying areas while the "garrigue" occupies the slopes and the uplands. The effects of this state of affairs are felt almost everywhere and virtually the whole region is at the mercy of uncontrolled building.

When the demand for land becomes sufficiently strong to cause the market-gardeners to sell up, the disruption extends to the area where they move next, since the proceeds from the sale or expropriation of their property will have been based on building land values and are therefore higher than elsewhere. There is thus a tendency to buy quickly at a high price with the result that the character of the newly affected area becomes modified. This has a chain reaction effect on the local real estate market. A new type of client appears and, by intensifying the use of the land, enlarging the size of the plots and other innovations, gradually brings about a change. This trend is accelerated if some of the members of a co-operative move out; when this happens the very existence of the whole group is compromised.

A sociological transformation also takes place, with the young people moving off to the nearby towns. Traditional village life is upset when people from the towns start using them as dormitories and treat the countryside as a visual and recreational amenity while playing no part in its husbandry. It is not the purpose of this paper to express a judgment but simply to point out what is happening so that the positive aspects can be knowingly encouraged and the negative effects purposefully attenuated. Care has to be taken to prevent a backlash which could prove counter-productive.

This is what makes it so difficult to decide on the right population densities and the organisation of human habitation. The large concentrations of apartment blocks which are to be found in all expanding French towns are often only a kind of obligatory transit camp whose inhabitants' ambition is to move into a private house, which may

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will be of dubious architectural value and will certainly be space consuming and complicate the planning of communal amenities. These two extremes in modes of living are like the two sides of the same coin.

3. FRINGE INDUSTRIALISATION

In the past, industries were set up in the vicinity of Marseilles on small plots of land interspersed among the houses. Today, however, industry tends to buy up large, flat, relatively cheap sites suitable for later expansion. The favourite sites are in the Etang de Berre region, some 30 kilometers west of Marseilles at the mouth of the Rhône. The oil refining industry has made its home on the banks of the Etang de Berre between Rognac and Lavera. It has created a new type of landscape - quite striking at night - but has had an adverse effect on the extremely pure air of the region. Catalytic cracking, moreover, gives off a repulsive odour. The net result has been to diminish the visual amenity of the banks of the Etang de Berre, although their development for recreational purposes is still planned.

Furthermore, in spite of serious efforts on the part of the oil industry to treat effluents, the Etang is being polluted. Wide fluctuations in the saline content have also upset the biocenotic balance of the waters. As a result of an "Electricité de France" (French Electricity Board) project, freshwater from the Durance canal is pouring in and diluting what was originally a salt-water lagoon. More recently, an influx of briny water has sent up the salinity level again. This water comes from a five million cubic meter underground reservoir being built near Draguignan, where freshwater is being used to flush out pockets in a salt bed. The reservoir, which is invisible from above ground and is therefore not a blight on the Lower Provence landscape, will be connected to the Berre refineries by a pipeline 65 kilometers long.

Fresh problems are arising in the wake of the realisation of the Fos port industrial complex, conceived in 1964 and started in 1968, which is one of the chief factors in the development of the metropolitan area. Public and private investment amounts to some 15 milliard francs and the work, which is well under way, gives some idea of the scale of the operation which will provide jobs for 20,000 people. So far, however, little has been done to create an attractive environment in an area which is very suitable for industry but not very hospitable to man. The ground is perfectly flat, swept by the Mistral at its most powerful and subject to a scorching sun and a high level of light reverberation in summer.

Although the land in the area has been stabilised by the growing of corn, after its disturbance nothing is grown, in spite of the fact that experience gained in the polders (which also have a briny soil) and on-site ecological studies show clearly that the land should be sown in the light of the projected industrial implantation. The need for an agreeable environment for man is obvious for humanitarian reasons but also because its importance is now recognised as a factor in working conditions and the cost of rehabilitating old industrial regions whose conversion is a difficult task partly because of their poor reputation.

Lastly, it should be noted that "frontiers" are also favourite areas for the opening of quarries. The metropolitan area encloses some 100 quarries extracting anything from gravel to limestone and in the Bouches-du-Rhône Département there are over 500 covering a total area of some 1,000 hectares, some of them in areas of great scenic beauty and artistic interest such as Baux de Provence.

4. THE NATURAL AND RURAL ENVIRONMENT IN THE VICINITY OF CONURBATIONS

In order to benefit from the way of life afforded by the natural conditions prevailing in the Marseilles area, it must be possible to get easily and quickly to those rural areas whose attractions have been re-discovered, conserved and sometimes improved. Like the nearby Riviera, this region is ideal for outdoor life. This factor must be properly reflected in town planning and the provision of open spaces. The urban dweller must be enabled to take maximum advantage of being able to live outdoors, a way of life which is traditional in Provence. This entails the provision of a complete range of outdoor and indoor amenities. If this is not done and there is too great a density of population aggravated by poor organisation and excessive social segregation, the result will be an exaggerated tendency to escape. This escape may be towards the city centre which, being small, will soon lose all its charm through over-crowding (the Canebière and the Vieux-Port in Marseilles and the Cours Mirabeau in Aix are good examples of this), or there may be a flight from town, in which case the remaining gaps in the sprawling, unplanned suburbs will be filled up and the passing pleasure of a few residents will be bought at the cost of spoiling the scene for all the ramblers. The agricultural environment and open spaces therefore have a most important rôle to play in maintaining the quality of life.

The area given over to agriculture

Agriculture covers a third of the Marseilles area. 80% of this area must be retained for special agricultural activities such as market-gardening and horticulture and rice-growing in the Camargue (which provides 75% of French consumption).

3.1.6

Urbanisation has caused the real estate market to flourish near towns and competition is particularly stiff on the coast. At La Ciotat, for instance, horticultural land is ideal for property development. The sun required for horticulture is an integral part of the unspoilable views sought by prospective house-purchasers. This problem exists along the whole of the Riviera coast and the terraced greenhouses near Nice are a case in point.

The competition between agriculture and industry is also keen because the present municipal system gives rise to scattered industrialisation. This is because, in the absence of a financial equalisation system, each municipality competes with its neighbours to attract industry and thereby increase its income from rates.

The administrative division of France is such (38,000 municipalities in an area of 550,000 square meters) that there are very few municipalities on the outskirts of large towns which are able to accommodate both industry and residents without spoiling the environment. When they are given over to one or the other function the industrial municipalities tend to be prosperous while the residential ones have to provide facilities for their population out of a small budget and find it very hard to meet the interest rates on their loans.

There is, thus, a tendency for the market-gardening belts around Marseilles, Salon, Arles, Pelissane and Auriol to be slowly eaten away by urbanisation and roads, while at the same time industrialisation is rolling back the arable land on the fringes of the Etang de Berre, Berre (Chateauneuf, Vitrolles, Martigues, Istres, St. Chamas), and from the Aubagne and Milles districts. On grounds of public interest the municipalities do not hesitate to purchase land in rural zones for commercial purposes as the prices there are considerably lower than in the zones where building is authorised.

Since most of the market-gardeners are direct operators working small plots, and the land is their sole capital, they have little difficulty, if the need arises or they receive a good offer, in selling a part of their holding only. The breaking-up of the plots and the laying on of piped water quickly leads to a rash of urbanisation, especially on the hillsides, where cropping is more difficult and the views more desirable. At Roquevaire, 25 kilometers from Marseilles, the number of homes built in one year went up from 25 to 120 after the opening of the Eastern motorway and the village is now only 30 minutes from Marseilles. It seems that housing estates are not popular since they are considered too restrictive, just like the large apartment blocks from which the city dwellers are seeking to escape.

Thus, out of the 7,000 or so homes surveyed in this area only 174 were on estates averaging six homes at the most. There is thus every reason to fear more or less uncontrolled urbanisation on a large scale on the outskirts of towns in the years to come.

It is easy to follow the chain of events set off by the proliferation of dwellings. The first inhabitants buy a property in a spot which is still unspoilt and once water and electricity are laid on they are followed by others. The former country road which could cope with three cars is soon worn out by ten and has to be surfaced. This gives the area a more established look and makes it easier to sell more plots of land. The metalled road which was suitable for ten cars becomes too small for fifty and has to be widened. However, it must follow the same route since the hard-up municipality may just be able to satisfy the electorate by repairing the roads but it lacks the wherewithal to buy up the additional land needed to adapt them to the traffic conditions, all the more so as, in the meantime, the land has been built on and the prices have gone up.

Under these conditions, pavements and bicycle tracks obviously go by the board. Pedestrians and cyclists are driven out or take their lives into their hands every time they venture on the road. Adults find that they have to use their cars a lot. The losers are the children, elderly people and all those who have a feeling for nature and who come to the country for peace and quiet and to escape the noisy, fume-ridden town. And all this is taking place in the most beautiful part of France and the one with the best climate.

The result is a phoney, inefficient, urban fabric, where the schools and civic and social centres are inadequate. Not until the density of the first buildings makes it financially worthwhile will everything be pulled down and the remaining agricultural land be completely transformed.

In the last analysis, the fate of agriculture in a metropolitan area is the touchstone of a voluntary regional planning policy.

Non-agricultural land

The conservation of non-agricultural open spaces has been the subject of careful study, since in the projects for the overall development of the region they are as important as sound transport facilities. The two concepts are, moreover, related: urbanisation during the next 20 years will be concerned mainly with the western part of the region (Berre-Fos).

Balanced growth for the whole area depends on first-rate links between the Aix-Marseilles urban area to the east and the banks of the Etang de Berre. Spontaneous ribbon building between the two would cause traffic problems and interfere with the fast communications planned. In the longer term, the occupation of land would make the provision of new roads or modern transport facilities over unbuilt land

difficult, perhaps impossible and certainly very costly for the community. The Etang de Berre constitutes a natural break between Vitrolles and the urban centres projected as part of the Fos industrial programme on the west bank of the Etang de Berre. Specific ecological studies played a big part in deciding on the limits of these areas.

These studies revealed the degree of stability of the different types of vegetation which are so vulnerable in the Mediterranean context. A knowledge of the degree of stability has made it easier to determine the density and limits to be imposed on dispersed dwellings and the best way of using natural areas to meet the plans for grouped or dispersed recreational amenities and protection against fires and erosion.

The ecological studies have been followed by regional landscape surveys, the object of which is to identify those areas which there are many reasons for preserving. A large, mainly urban population, with growing environmental demands, would set up intolerable pressures if there were insufficient open spaces in the immediate vicinity of the urban centres. This might mean that the Camargue Regional Nature Park would become the sole outlet and would suffer in consequence.

Inside the metropolitan area itself there must be easy access to fully equipped water sports amenities (beaches and boating). These should be natural waterside sites - the most popular in summer - if necessary fitted out for cultural and sporting pursuits.

Planners have a further reason for turning their attentions to natural open spaces. Water supplies and anti-erosion measures require that plant life should be sustained on the high ground situated to the east of the Aix-Marseilles region (Ste-Victoire la Ste Baume). What is more, the incidence of fire in the Mediterranean area necessitates overall planning providing for fire-fighting roads, fire breaks, hillside lakes and the fitting out of other water supply points. Needless to say, the co-ordination of these problems with those connected with the provision of urbanised recreational amenities and the presence of visitors in the hills, causes serious headaches for the different authorities concerned. The inflammability of the different types of vegetation, the influence of winds and land relief and the spread of fires are now being carefully studied with a view to seeing how the wooded uplands with their high proportion of resinous trees so prone to fire and the deadly bark-beetle can be gradually transformed.

In economic terms, these uplands are at present practically valueless. Since most of the land is privately owned it is difficult to take action designed purely to improve the environment form. The problems involved have to do with landscaping, water supply and anti-erosion protection by conservation or the replanting of woodlands that harmonise with the natural surroundings.

5. THE COAST AND ITS PROBLEMS

Because of the narrowness of the Continental Shelf, the area of intense marine biological activity, which goes from the surface to a depth of 35 meters, is extremely limited. It is subject to a multitude of pressures due to the large number of people who have moved to the coast from further inland, and to the seasonal influx of tourists. The sea-front has become the prime target of property developers. The natural outlets for waste waters are the coastal rivers and streams. However, these are generally not very long and the waters are at their lowest, warmest and least oxygenated just when the greatest number of people are present. There is no time for the natural purification processes to take place, even partially. The situation is made worse by the amount of effluent discharged from the Fos area, the presence of tankers in the Mediterranean and the off-shore drilling projects in the Golfe du Lion. The narrow biological production strip of the sea-front is in great danger from this domestic and industrial waste, to which must be added that discharged from the Rhône and Saône Basin. Lastly, boating, which is expected to increase tenfold during the next twenty years, will boost the effluent discharge and this, coupled with the indirect effects of the building of boat harbours, will have a serious effect on currents and pollution levels.

A further complication as regards the Mediterranean is that, because there are virtually no tides, access to the biologically active zone - which always presents an ecological hazard - is unrestricted. This is not the case on the Atlantic coast where the tempo and size of the tides spreads the zone of contact over a wider area and prevents access to it for almost half the time.

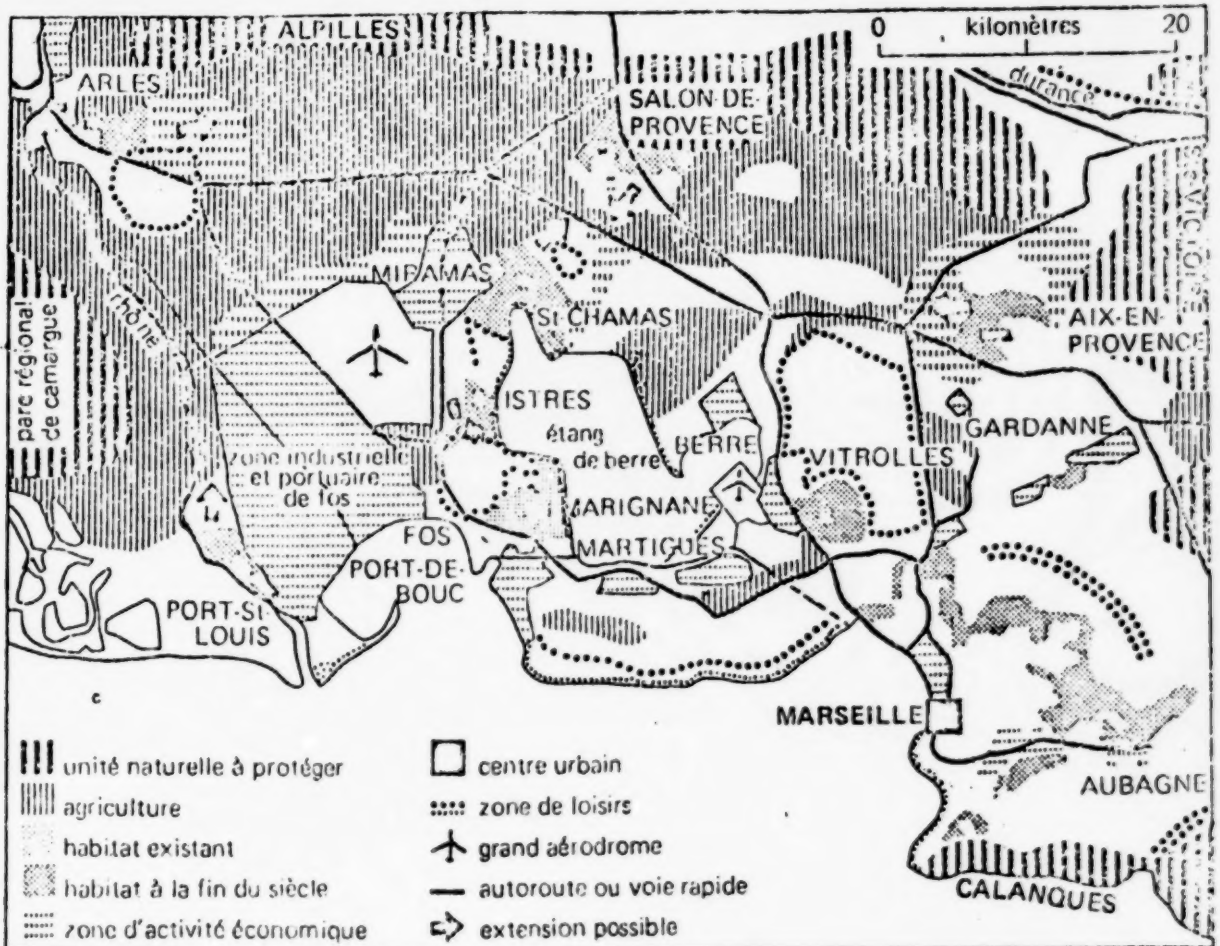
In spite of the sea's apparent capacity for regeneration, a detailed survey of the situation on the sea-front shows that the present rate of occupation is having a detrimental effect on quality and quantity and endangering marine resources and the maritime heritage.

Conclusion

The voluntary, and relatively recent, policy of promoting metropolitan regions facilitates the balanced expansion of the region in such a way that each of its centres benefits, not only from its own driving-force, but also from that of its neighbours, which are sufficiently near to encourage the development of close links and sufficiently far away to make it possible to conserve the highly varied natural environment which will enable the inhabitants to lead a fuller life. Such a setting, based on the region as a whole, contrasts sharply with the traditional introspective concept of town planning confined, as it is, to a small area. The regional scale of the large city makes it mandatory to take into account all the consequences of organisation and the promotion of activities with the result that development has to be looked at as a whole, i.e. in terms of environment.

It is easy enough for a town to get round its pollution problems by exiling its factories or power station to an isolated spot, thus making sure that the effects of pollution are felt "somewhere else". In like manner it can avoid tackling the problem of traffic congestion in the city centre if the inhabitants seek, and perhaps mutilate, nature "somewhere else". The concept of the metropolitan area gives the city back this "somewhere else" and invests all the inhabitants with responsibility for it, in other words, with responsibility for the new "frontiers" representing the socio-economic pole of attraction.

AIRES METROPOLITAINES DE MARSEILLE-FOS



N A T O U N C L A S S I F I E D

3.2.a.0

ELEMENTS OF A POLICY ADAPTED TO THE COASTAL ENVIRONMENT (FRANCE)
SOME OFFICIAL DOCUMENTS

French legislation in this field had hitherto been confined to careful shore protection. Institutions at inter-departmental level and with executive powers have recently been created to deal with development problems in some areas (the opening up of Languedoc-Roussillon and Aquitaine for the tourist trade), and also with problems connected with the environment and nature conservation (inter-departmental Board for the Mediterranean coast, with special responsibility for supervising the industrial development at Fos-sur-Mer, and the residential development of the Riviera). Special arrangements have been made for these areas and their hinterland.

More recently, the Government, which set up an inter-departmental working group in 1971, decided to review many aspects of the general provisions governing the coastal area, which is now under increasing pressure from competing factions (industrial areas, urban development, recreation areas, nature reserves, aquaculture, etc..)

N A T O U N C L A S S I F I E D

3.2.a.0

N A T O U N C L A S S I F I E D

3.2.a.1

3.2.a COASTAL ZONES: ELEMENTS OF A SPECIFIC POLICY FOR
THE COASTAL ENVIRONMENT

OFFICIAL DOCUMENTS

The NATO/CCMS pilot study group on environment and regional planning suggested in April 1971 that a compilation be made of regulatory texts and basic documents concerning coastal zones planning and the protection of coastal sites.

The specific environment of coastal zones presents a number of common characteristics in many countries despite evident differences: ecological wealth, the quality of sites, and the attraction of zones that are transitional between two types of environment make them especially vulnerable, which calls for strict protection measures. It should also be noted that touristic, residential and industrial development raises complex problems to which many types of solution may apply.

* * *

Legislative regulatory and administrative measures applicable today, with regard to the French coastal zone, have three different origins:

(1) legislative or regulatory measures established in the past, the first being that of creating a "maritime public domaine" with limits that were defined more than three centuries ago; new texts have been added since imposing specific restrictions for the safeguard of the aesthetics of buildings (sensitive areas) or, less important, for the creation of green belts (green belt taxes);

(2) besides the above legislative or regulatory measures, the State has undertaken a number of operations for touristic development in defining new resorts and in developing the general infrastructures according to a global plan on coastal zones of more than 100 kms., such as the Languedoc coast, the coastal zone west of the Rhone river, and more recently, the Aquitaine coast south of the Gironde estuary;

(3) finally, the French government has recently decided to undertake long-term prospective studies for the development of the whole of the coastal zone of the country, in order that the experience gained during the development operations just mentioned may permit the definition of overall guidelines for the development and urbanisation of coastal areas. This programme should be completed and its conclusions finalized early in 1973.

It will also be noted that all common law texts for territorial development and urbanisation applicable in France are naturally applicable in the coastal zones. This is the case for development and urbanisation schemes (SDAU) established for all urban areas, and land occupation plans (POS) which provide for

N A T O U N C L A S S I F I E D

3.2.a.1

3.2.a.2

regulations concerning building codes for individual areas covered by the development schemes. Similarly, deferred development zones (ZAD) may be created in the coastal area as well as in other parts of the territory in which local authorities obtain a priority for buying land.

The main texts concerning the French coastal zone will be found hereunder:

REPORT FROM THE "DELEGATION A L'AMENAGEMENT DU TERRITOIRE ET A L'ACTION REGIONALE" TO THE "COMITE INTERMINISTERIEL PERMANENT POUR L'ACTION REGIONALE ET L'AMENAGEMENT DU TERRITOIRE"

Development of the Coast

The coast is a frontier area exposed to the two-fold onslaughts of land-based and sea-based activities.

It tends to act as a magnet for a host of activities centred on the hinterland. These can be connected either with tourism or with the expansion of industries in search of coastal sites, where they can benefit from water cooling facilities (nuclear power stations), tidal energy (tidal power stations) proximity to the sea (oil refineries) or the combined advantages of the concentration of industry and port facilities.

Maritime activities also generate different uses of the coastal area: deep-sea fishing by the traditional methods or application of new breeding techniques in coastal waters (aquaculture, conchyliculture, ostraciculture and so on), expanded sea traffic and heightened activity in the reception ports, etc. It can also be expected that the sea which is being exploited on only a limited scale for the present will serve an increasing number of purposes in the near future: to provide organic matter of nutritional or medical value and off-shore oil, and for tourism, habitat and submarine transport.

The extension of all these activities will create serious problems over the next few years insofar as the harmonious development of the coastal area is concerned. The acquisition of land at the edge of the sea has already raised the issue of access to the shore, the siting of industries and of tourist amenities will lead to rival claims for available space on land and at sea. The rapid growth of urbanization is causing serious pollution of the natural land and sea environment and this pollution will be even greater in the future. The coast being as it is a frontier between two natural elements constitutes a particularly rich habitat of fauna and flora and any alteration to it leads to ecological upheavals which can have extremely serious consequences in the long run.

The question which now arises is how and for what purpose the coastal areas should be used. There is consequently a need for some general reflection on the problems relating to the development of the French coast.

The case has been made out for setting up a working group comprising representatives from the different ministries and bodies concerned to consider these problems. It is only from the vantage point of a comprehensive, long-term view of the situation that the coastline of the future can be mapped out in its broad essentials.

It seems likely that in addition to this comprehensive and very general view of future development, there will be a need to tackle more limited problems, sensitive points or areas, calling for special attention. The coast is not a uniform whole but a series of distinctive tracts. It is important that they should each be examined individually in the contexts of their relation to the sea, their relation to the land and in the context of future prospects.

The relevant studies, carried out under the joint responsibility of Mr. Bettencourt and Mr. Poujade, will be directed by Mr. Michel Piquard, an Administrative grade civil servant, within the framework of the studies connected with the preparation of an overall development plan for France.

Extracts from the decisions of the "Comité interministériel permanent pour l'action régionale et l'aménagement du territoire"

(Standing Inter-Departmental Committee for Regional Action and Town and Country Planning)

11. MASTER PLAN FOR DEFENCE BASES IN THE PARIS AREA AND ON THE COAST - FORCES LAND POLICY ON THE COAST. LONG-TERM PROSPECTS FOR THE FRENCH COAST

A.

2. The principle and means of implementation of a master plan for defence bases on the coast (starting with the Mediterranean) are hereby approved. The aim of this master plan, which has been conceived in the same spirit as the plan for the defence bases in the Paris area, is to define the purposes for which land and buildings acquired by the military authorities will be used in the medium-term (about 10 years).

3. Approval is also given to the aims, principles and methods of implementation of a new forces land policy on the coast. In compliance with this policy, unwanted military buildings on the coast will no longer be disposed of but will be let within the framework of a general policy for town and country planning, tourism, and cultural and leisure activities. The Minister of State for National Defence and the Ministers concerned will by common agreement, work out the details of these different points in the light of studies conducted by an inter-departmental working group to be set up by the Minister of State and comprising representatives from all the Ministries concerned. Their conclusions, which must not be contrary to the fundamental rules applicable to State-owned property will be submitted in due course to the Inter-Departmental Committee.

3.2.a.4

B. The joint memorandum from the Ministers with special responsibilities to the Prime Minister for town and country planning, nature conservation and the environment is noted as is likewise the decision to set up a study group, within the framework on the studies on the overall development plan for France, with instructions to report to the Government within eighteen months on the long-term prospects for the French coast.

This study group, led by Mr. Piquard, will work in conjunction with, but without taking over the responsibilities of, the Government departments concerned.

ORDER OF 3RD SEPTEMBER, 1958

setting up a Committee for the Conservation of
Provence-Côte d'Azur Coast

(Official Gazette dated 4th September, 1958)

The Minister for Housing

Considering the Town Planning and Housing code and in particular Title 8 thereof

Hereby orders as follows:

Article 1

For the purpose of conserving the natural beauty and tourist attraction of the Côte d'Azur, ensuring that new buildings blend in with its landscape and protecting its wooded areas and shoreline, an advisory committee, to be known as the "Committee for the Conservation of the Provence-Côte d'Azur Coast" is hereby set up under the Minister of Housing.

Article 2

The terms of reference of the Committee shall be as follows:

1. To propose to the Minister such action and to make such suggestions as can contribute to the preservation of the natural beauty of the Côte d'Azur.

2. At the request of the Minister or of the "Prefects" for the "Départements" of the Bouches-du-Rhône, Var and Alpes-Maritimes, to furnish advice on general town and country planning and urbanization measures contemplated by Government departments or by local authorities as well as on the aesthetic appearance of the main projects for housing estates, construction work or public works submitted to them.

Article 3

The Committee shall consist of twenty-four properly qualified members designated by the Minister of Housing, including:

Six proposed by the Prefect of the Bouches-du-Rhône

Six proposed by the Prefect of the Var

Six proposed by the Prefect of the Alpes-Maritimes.

The members of the Committee shall serve for three years and shall elect a new Chairman each year.

3.2.a.6

The "Prefects" may sit with the Committee if they so desire. They shall be assisted by the "Département" directors of the Ministry of Housing and by any official whose presence they may require for discussion of particular items on the Agenda.

The duties of Committee Secretary shall be performed by a senior town planning officer of the Ministry of Housing.

DECREE NO. 59-678, 26TH JUNE, 1969

on the preservation of the provence-Côte d'Azur Coast

(Official Gazette dated 27th June, 1969)

The Prime Minister

Acting on the report of the Minister of Housing, the Minister of State for Fine Arts, the Minister of Justice, the Minister of Education, the Minister of the Interior, the Minister of Public Works and Transport and the Minister of Agriculture:

Considering the Constitution and in particular Article 37 thereof

Considering the town planning and housing code

Considering Decree No. 58-1463, dated 31st December, 1958 on urbanization plans

Considering Decree No. 58-1466, dated 31st December, 1958 on housing and industrial estates

Considering Decree No. 58-1467, dated 31st December, 1958 on building licences

Considering Decree No. 58-1468, dated 31st December, 1958 on the conservation and creation of wooded areas in the communes required to have an urbanization plan

Considering Decree No. 59-275 dated 7th February, 1959 on camping

Considering Article R.25 of the Penal Code

After consulting with the Council of State:

Hereby decrees as follows:

Article 1

(Decree No. 67-306 dated 30th March, 1967, Article 1)

In the "Departements" of the Alpes-Maritimes, the Bouches-du-Rhône and the Var, the boundaries within which the provisions of the following articles shall apply with a view to preserving the features of the Provence-Côte d'Azur coast may be fixed by order of the Minister of Public Works, subject to the agreement of the Minister for Cultural Affairs, the Minister of the Interior, the Minister of Agriculture and the Minister for Tourism and after consulting with the "Conseils Généraux" (regional councils) concerned.

Article 2

By means of an order brought to the notice of the owners concerned and issued after consultation with the Départements' Town Planning Commission and Commission for the Preservation of areas of natural beauty and buildings of historic interest, "Prefects" shall be empowered to designate the wooded areas not covered by forestry regulations and needing to be preserved, with a view to bringing them, prior to the approval of urbanization plans, within the scope of Articles 2, 3 and 4 of the above-mentioned Decree No. 58-1468 dated 31st December, 1958.

Failure to comply with the provisions of the aforementioned sub-paragraph shall render the offenders liable to the penalties provided for in the said decree.

The orders referred to in the first sub-paragraph of the present article shall cease to be applicable to land not classified as wooded areas in the urbanization plans as finally approved.

Article 3

In application of the provisions of Article 2 of the afore-mentioned decree of 7th February, 1959, all natural or artificial persons proposing to accommodate either regularly or occasionally on land belonging to them or at their disposal more than ten campers or more than three tent-type shelters at one and the same time shall be required to apply for permission to the Prefect. Camping sites authorised by virtue of the present sub-section shall be subject to the inspection provided for in Article 4 of the afore-mentioned decree.

In anticipation of the provisions of urbanization plans, the Prefects shall, after consulting with the Département's Town Planning Commission, the Département's Camping Commission and the Département's Commission for the Preservation of areas of natural beauty, be empowered to order that the afore-mentioned land may not be used as an habitual camping site or only subject to certain conditions.

Persons opening a camping site without the permission provided for in sub-section 1 above or after the suspension or withdrawal of such permission, shall be liable to prison sentences of ten days to one month or fines of F.fr. 400 to F.fr. 1,000. Persons obstructing the exercise of the right of inspection referred to in the same sub-section shall be liable to the same penalties.

Article 4

Applications for authorisation to divide up land into building plots and applications for building licences shall be submitted to the Département's Town Planning Commission or its building licence section for processing in accordance with the provisions of Article 4, sub-section 3 of Decree No. 58-1466 dated 31st December, 1958, on housing and industrial estates or of Article 1 of Decree No. 58-1467 dated 31st December, 1958 on building licences.

3.2.a.9

Article 5

The Minister of Housing, the Minister of State for Fine Arts, the Minister of Justice, the Minister of the Interior, the Minister of Public Works and Transport, the Minister of Education and the Minister of Agriculture shall be individually responsible for the implementation of those aspects of the present decree which concern them. The decree shall be published in the Official Gazette of the French Republic.

1961 FINANCE ACT

(No. 68-1384 dated 23rd December, 1960)

(Official Gazette of 24th December, 1960)Article 65

I. Within the areas entitled "sensitive areas", defined in accordance with Decree No. 59-768, dated 26th June, 1959, as amended, and concerning the features of the Provence-Côte d'Azur coast, or subsequently defined in other regions in application of decrees serving the same purpose, issued after consultation with the "Conseils Généraux" concerned, the Départements shall have a right of pre-emption on all land offered for sale within zones designated by decree of the Minister of Housing, subject to the approval of the "Conseils Généraux".

The purchase price shall be fixed by the competent legal authority on expropriation in the conditions laid down in Article 21 of Order No. 58-997, dated 23rd October, 1958.

II. A "Département" tax on open spaces shall be charged within the aforesaid areas. This tax shall be in lieu of a fixed contribution to "Département" expenditure on the procurement of land by private treaty, by compulsory purchase or by exercise of the right of pre-emption referred to in paragraph 1 above, or on the laying out of these sites as recreational ground forming part of the Département's State-owned land.

This tax shall be levied on all division of land for building purposes authorised after the date of publication of the present Act.

It shall also be levied on construction work within the terms of Article 2 of Decree No. 58-1467, dated 31st December, 1958 on building licences, using land not subject to the tax payable in application of the present article.

III. The tax shall consist of:

- (a) A fixed sum of F.Fr. 500 per plot; this sum may be increased by the "Conseils Généraux" to a maximum of F.Fr. 1,000.
- (b) A proportional sum equal to one-hundredth of the fixed sum for every hundred sq.m or fraction of one hundred sq.m of the area of the plot in excess of 2,000 sq.m.

In the case provided for in the last sub-section of paragraph II above, the tax shall be calculated on the basis of one plot for each individual building.

IV. As an interim measure, and in the case of land divided for building following authorisation granted subsequent to 1st January, 1961 and prior to the publication of the present Act, the tax shall be payable at the time of the first building authorised on each plot.

- V. Exemption shall be granted on the following:
- (a) Land divided for building as referred to in paragraph II above where such land is not intended for housing, where the developers are the State, the Départements, the communes and non-profit-making or non-industrial public bodies, and where the land is intended exclusively for housing financed with State aid;
 - (b) Buildings as referred to in paragraph IV above where they are built by the State, the Départements, the communes, non-industrial or non-profit-making bodies, and by State-aided housing agencies or where an application for a building licence has been lodged between 1st January, 1959 and the date of publication of the present Act.
- VI. The tax shall be collected in accordance with the procedure for Département receipts.
- VII. The conditions of application of the present Article shall be laid down in a Government regulation.

DECRETE NO. 63-580 DATED 18TH JUNE, 1963

On the creation of an Inter-departmental Board for the
development of the Languedoc-Roussillon coast as a
tourist area

(Official Gazette, dated 19th June, 1963)

The Prime Minister

Considering Decree No. 63-112 dated 11th February, 1963
setting up a department for regional action and town and country
planning

Hereby decrees as follows:

Article 1

An Inter-departmental Board is hereby set up under the
Minister responsible for town and country planning and regional
action with a view to the co-ordination in the four "Départements"
of the Gard Hérault, Aude and Pyrénées Orientales of activities
relating to the development of the Languedoc-Roussillon coast as
a tourist area.

Article 2

The Board shall be chaired by an appointee of the
Prime Minister and comprise:

A representative of the Minister of the Interior

A representative of the Minister of Finance and
Economic Affairs

A representative of the Minister of Public Works and
Transport

A representative of the Minister of Agriculture

A representative of the Minister of Housing

A representative of the Minister of Tourism

A representative of the Secretary of State for
Budgetary Matters

The Prefect responsible for the co-ordination of the
area covered by the "Languedoc-Roussillon"
programme

A civil servant designated by the Prime Minister to
be responsible for serving the Board.

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best available copy.

Article 3

The Prefects of the Départements concerned shall attend the meetings of the Committee as required.

Article 4

The Secretary shall prepare the work of the Board and supervise the implementation of its decisions.

The Board shall be serviced by a planning department to be placed under the co-ordinating Prefect. It shall be directed by the Secretary to the Board. The necessary staff shall be seconded by the ministers concerned at the request of the minister responsible for the Town and Country Planning Department.

Article 5

The Board shall be set up for a period of three years as from the date of publication of the present decree(1).

Article 6

The Board shall be responsible for drawing up an outline plan for the development of the Languedoc-Roussillon coast, for selecting the methods of implementation thereof and for following up its implementation by the State, local authorities and all public or private bodies receiving State aid, or subject to State supervision.

It shall, after consulting with the co-ordinating Prefect, submit to the inter-departmental council for problems relating to town and country planning and to the ministers concerned, the decisions called for in this sphere, particularly as regards:

- the general arrangements for the implementation and financing of the operations;
- the articles of association, purpose and activities of the semi-public construction companies (sociétés d'économie mixte d'équipement) engaged on the development;
- the conditions on which the land developed by these companies may be assigned;
- problems in respect of capital appreciation consequent upon the investment of public funds.

(1) This period was extended by a further three years by Decree No. 66-387 dated 15th June, 1966.

Article 7

Local authorities concerned by these development works shall be regularly briefed and consulted through the Prefects during the preparatory stage. They shall, moreover, be briefed from time to time on planning and work progress.

Article 8

The Inter-Departmental Board shall likewise be required to examine and propose any amendments to the regulations and any relaxation of the administrative and financial procedures which, in its view, the special nature of the operation in question calls for.

Article 9

Responsibility for the administrative aspects of the development of the Languedoc-Roussillon coast and for planning and the supervision of work incumbent on the State shall normally lie with the central departments of Ministries and their local offices in the Départements under the authority of the Prefects.

Article 10

Credits for development and improvement work shall be included in the local authorities' budget of the Ministry of Finance and Economic Affairs. They shall be transferred to the budgets of the different Government departments concerned on the proposal of the Board and in accordance with the general timetable and the list of operations approved by the inter-departmental council on problems relating to town and country planning.

At the request of the Board, each minister concerned shall designate a sole disbursement officer for all the Ministry's expenditures relating to the implementation of the development programme in the four Départements referred to in Article 1 above.

Article 11

The Board's planning and operating expenses and the expenses of the planning department shall be charged against the local authority credits in the budget of the Minister of Finance and Economic Affairs. The Secretary of the Board shall act as payments officer.

Article 12

The Minister of State responsible for administrative reform, the Minister of the Interior, the Minister of Finance and Economic Affairs, the Minister of Public Works and Transport, the Minister of Agriculture, the Minister of Housing, the Secretary of State responsible to the Prime Minister for

3.2.a.15

Parliamentary Relations and the Secretary of State for the Budget shall be individually responsible for the implementation of those provisions of the present decree which concern them. The decree shall be published in the Official Gazette of the French Republic.

3.2.a.15

3.2.a.16

DECREE NO. 64-9 DATED 7TH JANUARY, 1964

concerning a general town and country planning
programme and a regional urbanization
plan for the Languedoc-Roussillon coast

(Official Gazette dated 8th January, 1964)

The Prime Minister

Acting on the report of the Minister of Housing, the Minister of Justice, the Minister of the Interior, the Minister of Finance and Economic Affairs and the Minister of Public Works and Transport

Considering the town planning and housing code

Considering Decree No. 58-1463, dated 31st December, 1953 on urbanization plans

Considering Decree No. 60-1219 dated 19th November, 1960 setting up a Standing Inter-Departmental Committee on problems relating to regional action and town and country planning

Considering Decree No. 63-580 dated 18th June, 1963 setting up an Inter-Departmental Board for the Development of the Languedoc-Roussillon coast as a tourist area

After consulting with the Council of State (Public Works Section)

Hereby decrees as follows:

Article 1

To permit the operations required in connection with the development of the Languedoc-Roussillon coast a general town and country planning programme shall be drawn up by the Inter-Departmental Committee for Town and Country Planning, acting on the report of the Minister responsible for the Department of Town and Country Planning and Regional Action.

Article 2

The programme referred to in Article 1 above may be supplemented by a regional urbanization plan covering all or part of the provisions of the outline urbanization plans drawn up in the implementation of chapter 1 of the above-mentioned decree of 31st December, 1958, particularly with respect to zoning and restrictions on the use of land.

This regional urbanization plan shall be submitted to the "Conseils Généraux" concerned for comment. Should the comments of any one of the "Conseils Généraux" not have been received by the first meeting following the request for consultation, it shall be assumed that there are no objections.

3.2.a.16

The plan shall then be approved on the proposal of the Inter-Departmental Board set up by virtue of the above-mentioned decree of 18th June, 1963, by decree of the Council of State acting on the report of the Minister of Housing and the Minister of the Interior.

Article 3

The general urbanization plan shall rank as an approved outline urbanization plan and its provisions shall have the same force in the area of the communes concerned pending approval, in compliance with current procedure, of the outline or detailed urbanization plans concerning the said communes.

Urbanization plans previously approved shall remain applicable to the extent that they comply with the provisions of the regional urbanization plan; they shall otherwise be brought into line with the former.

Article 4

The Minister of Housing, the Minister of Justice, the Minister of the Interior, the Minister of Finance and Economic Affairs, the Minister of Public Works and Transport, the Minister of Agriculture and the Secretary of State attached to the Prime Minister's Office shall be individually responsible for the implementation of those provisions of the present decree which concern them. The decree shall be published in the Official Gazette of the French Republic.

DECREE NO. 65-990 DATED 19TH NOVEMBER, 1965

on the development of the Golfe de Fos Area

(Official Gazette dated 25th November, 1965)

The Prime Minister

Acting on the report of the Minister of Housing, the Minister of the Interior, the Minister of Justice, the Minister of Finance and Economic Affairs, the Minister of Public Works and Transport, the Minister of Industry and the Minister of Agriculture

Considering the town planning and housing code

Considering Decree No. 58-1463 dated 31st December, 1958 on urbanization

Considering Decree No. 61-1298 dated 30th November, 1961 setting out the administrative regulations for the application of Article 91 of the afore-mentioned code

Considering Decree No. 60-1219 dated 19th November, 1960 setting up a Standing Inter-Departmental Committee on problems relating to regional action and town and country planning

After consulting with the Council of State (Public Works Section)

Hereby decrees as follows:

Article 1

To permit the operations required in connection with the development of the Golfe de Fos area, a town and country planning programme shall be drawn up by the Inter-Departmental Committee for Town and Country Planning, acting on the report of the Minister responsible for the Department of Town and Country Planning and Regional Action.

Article 2

The programme referred to in Article 1 above may be supplemented by a plan covering all or part of the provisions of the outline urbanization plans drawn up in implementation of Chapter 1 of the above-mentioned decree of 31st December, 1958, particularly with respect to zoning and restrictions on the use of land.

The plan shall be submitted for comment to the joint council (Syndicat Mixte) for the development and improvement of the Golfe de Fos area and the "Conseil Général" of the Departement of the Bouches-du-Rhône which shall also be notified of the general development programme provided for in Article 1.

The plan shall then be approved by decree of the Council of State acting on the report of the Ministers of Housing and the Interior. The present decree shall be published in the Official Gazette of the French Republic and a notice to this effect shall be inserted in at least two of the newspapers on sale in the Département.

Article 3

The programme and plans provided for in Articles 1 and 2 above shall have the force of national planning directives within the meaning of Article 15 of the above-mentioned decree of 30th November, 1961.

Outlines or detailed urbanization plans previously approved shall be revised to bring them into line with the said directives.

Plans thus revised and plans outstanding for other areas shall take account of these directives for which they shall be substituted on their entry into force.

Article 4

The Minister of Housing, the Minister of the Interior, the Minister of Justice, the Minister of Finance and Economic Affairs, the Minister of Public Works and Transport, the Minister of Industry, the Minister of Agriculture and the Minister of State attached to the Prime Minister's Office shall be individually responsible for the implementation of those provisions of the present decree which concern them. The decree shall be published in the Official Gazette of the French Republic

3.2.a.20

DECREE NO. 67-931 DATED 20TH OCTOBER, 1967

on the creation of an Inter-Departmental Board
for the Development of the Aquitaine Coast

(Official Gazette dated 24th October, 1967)

The Prime Minister

Considering Decree No. 63-112 dated 14th February, 1963,
setting up a Department for Regional Action and Town and Country
Planning

Considering Decree No. 64-251 dated 14th March, 1964,
on the organization of government services in the areas selected
for regional development

Considering Decree No. 64-252 dated 14th March, 1964,
setting up regional economic development councils

Considering Decree No. 67-376 dated 28th April, 1967,
on the powers of the Minister responsible in the Office of the
Prime Minister for the Development Plan and for Town and Country
Planning

Hereby decrees as follows

Article 1

An Inter-Departmental Board is hereby set up under the
Minister responsible in the Prime Minister's Office for the
Development Plan and for Town and Country Planning with a view
to the co-ordination, in the three Départements of the Gironde,
Landes and Basses-Pyrénées, of the activities relating to the
development of the Aquitaine coast.

Article 2

The Board shall be chaired by a nominee of the
Prime Minister, appointed on the proposal of the Minister respon-
sible in the Prime Minister's Office for the Development Plan and
for Town and Country Planning. It shall comprise:

A representative of the Minister of Cultural Affairs

A representative of the Minister of the Interior

A representative of the Defence Minister

A representative of the Minister of Finance and Economic
Affairs

A representative of the Minister of Public Works and
Housing

3.2.a.20

3.2.a.21

A representative of the Minister of Agriculture

A representative of the Minister of Transport

A representative of the Minister of Postal and Communications Services

A representative of the Minister for Youth and Sport

A representative of the Secretary of State responsible in the Office of the Prime Minister for Tourism

A representative of the Secretary of State for Economic Affairs and Finance

The Prefect of the Aquitaine area and Prefect of the Gironde

The Prefect of the Landes

The Prefect of the Basses-Pyrénées

A representative of the Director-General of the Development Plan

A representative of the National Forestry Commission

The Board may consult any person and any expert whose views it may require.

Article 3

The Board shall be set up for a period of three years as from the date of publication of the present decree.

Article 4

The Board shall be responsible, in conjunction with the Inter-Departmental Study Group on the development of the coast as a tourist area and the Inter-Departmental Commission on the development of rural areas for tourist purposes, for drawing up a general plan for the development of the Aquitaine coast, selecting the means of implementation thereof and following up its implementation by the State, local authorities and all public or private bodies in receipt of State aid or subject to State supervision.

It shall, after consulting with the Prefect of the area, submit to the Inter-Departmental Committee on problems relating to town and country planning and to the Ministers concerned the decisions called for in this sphere, with particular respect to the general arrangements for the implementation and financing of the operations.

Article 5

The Inter-Departmental Board shall be notified of any proposals for the sale, assignment or long-term rental of land, wooded or otherwise, which is the property of either the State, public bodies or the local authorities, and of any proposal for

new roads or canals and of any proposal to clear forests on land owned by the State, or the local authorities or by private persons.

Article 6

The Regional Economic Planning Commission and the local authorities affected by the development work shall be regularly briefed and consulted through the regional Prefect and the local Prefects during the preparatory stage. They shall, moreover, be briefed from time to time on planning and work progress.

Article 7

Responsibility for the administrative aspects, of the development of the Aquitaine Coast and for the planning and supervision of work incumbent on the State shall normally lie with the central departments of the Ministries and their regional and Département offices, under the authority of the Prefect of the Aquitaine area and of the Gironde, the Prefect of the Landes and the Prefect of the Basses-Pyrénées acting in pursuance of their respective powers.

Article 8

The Minister of State for Cultural Affairs, the Minister of State for the Government Service, the Minister responsible in the Prime Minister's Office for the Development Plan and for Town and Country Planning, the Minister of the Interior, the Minister of Defence, the Minister for Finance and Economic Affairs, the Minister for Public Works and Housing, the Minister of Agriculture, the Minister of Transport, the Minister for Posts and Telecommunications, the Minister for Youth and Sport, the Secretary of State for Economic Affairs and Finance, the Secretary of State responsible in the Prime Minister's Office for Tourism, shall be individually responsible for the implementation of those provisions of the present decree which concern them. The decree shall be published in the Official Gazette of the French Republic.

CONTROL OF POLLUTION OF THE SEA SHORE

Circular No. 71-09 dated 6th January, 1971
(Public Works and Housing)

The Minister of Public Works and Housing has issued a circular, No. 71-09 dated 6th January, 1971 to the heads of outside services of his Department urging them to take active steps to control pollution of the sea. The circular refers to the statutory instruments on which such action should be based and describes the implementary measures to be applied.

From: The Minister of Public Works and Housing

To: Directors of Departement Maritime Services
(through the Prefects)

Chief Engineers of the Maritime Services of the Pas-de-Calais and Languedoc-Roussillon

Managers of autonomous ports

c.c. All Prefects; Heads of Regional Services of the Ministry
(through the regional Prefects)

Senior Engineers responsible for the general inspection of maritime services (7th and 24th to 27th).

1. The urbanization of the coastal areas, the creation of new ports and the rapid growth of amateur boating all imply that special attention must henceforward be paid to the pollution of the sea shore and that a sustained effort must be made in several directions to combat the deterioration of the environment.

The control of pollution of the sea as part of the duties of both the maritime service and the local office of the Ministry must accordingly be one of your main concerns.

1.1 It will be incumbent on you as part of your responsibilities for the policing and conservation of the maritime domain of the State and for its management in general to play an active part in the control of pollution of the sea.

Such pollution is caused in most cases by urban or industrial effluents discharged from plant located on the maritime domain of the State or carried across it. Furthermore, regardless of whether pollution is caused by such practices or by the dilution under the effect of tides and currents, of polluted river water or of waste dumped at sea, it is having increasingly disastrous effects on the use of the maritime domain of the State for conchyliculture, fishing, tourist activities, sport and leisure.

1.2 As the Ministry's Director for the Département you are responsible for urban development as well as for the implementation of the town and country planning policy and as such are required to draw up the public health regulations to be attached to urbanization documents and to take part in the programming of treatment plant. The effect of these functions must be to make you continually aware of pollution problems. These can seriously affect the urban environment itself both from the health point of view and from the point of view of the recreational and leisure opportunities of city dwellers. The latter are becoming an increasingly vital aspect of modern life, the quality of which becomes ever more important as the fundamental quantitative requirements are gradually met.

1.3 The control of pollution of the sea is the concern of a number of Government departments: the Public Health services, the maritime services and the Department responsible for preservation orders are likewise concerned. You will be responsible, under the authority of the Prefect, for raising such issues as require resolution with the Government departments concerned either at the planning stage or during the implementation of procedure initiated by you.

2. Measures taken by you to prevent the pollution of the sea must be based on the relevant statutory instruments, the most important of which are as follows:

2.1 Article 64 of the Seaport Code which states that it is an offence to take any action which can adversely affect the depth and cleanliness of port and harbour waters and the condition of port and harbour facilities and which provides for the payment of a fine for dumping soil or rubbish in the harbour or harbour extension waters.

2.2 Article 2 of Law No. 64-1245 dated 16th December, 1964 on water management and distribution and on the control of water pollution which makes it an offence to discharge or immerse into the sea any substances which could be harmful to public health and to underwater fauna and flora and which could jeopardize the economic and touristic development of the coastal areas. The discharge or immersion of such substances may however be authorised and appropriate regulations drawn up provided that this is done in such a way that the effect is harmless and that there is no nuisance.

The decree implementing this enactment is in preparation. It stipulates that the authority responsible for investigation (which includes a public enquiry and inter-departmental consultation) shall be the maritime service concerned.

2.3 The circular dated 7th July, 1970 addressed by the Minister of Public Health and Social Security to Prefects (Official Gazette dated 7th August, 1970) to which the central services of my Department contributed and which concerns the introduction of public health measures in built-up areas and

hygienic control of sources of pollution contains clear-cut guidance on the part you are required to play, particularly as regards the formulation of regulations for waste disposal and the control of processing plant operation.

The inter-departmental circular dated 25th June, 1965 on public health measures in coastal areas and ministerial circular AF/OE No. 547 dated 25th September, 1967 on the discharge of domestic effluent into the sea should also be borne in mind.

2.4 Circular S.C. No. 3655 dated 27th March, 1969, which concerns the control of pollution of the coast and participation in cleaning-up operations. The inter-departmental instruction on the accidental pollution by hydrocarbons of the French coast dated 23rd November, 1970 gives clear guidance on the part which you must play and on the action to be undertaken in the case of very extensive pollution warranting the announcement of emergency measures by the Prime Minister.

2.5 The circular of 22nd October, 1970 on the pollution of boating harbours which refers to a circular to be issued concerning the application of public health and cleanliness measures in boating ports and the technical and administrative instruments to be applied to this end. It likewise refers to the pollution of harbours and their surroundings both on shore and at sea and lists the implementary instruments already available to Government departments.

3. If pollution is to be effectively dealt with, adequate machinery is essential.

3.1 You will be required to designate a member of your staff to organize these activities and to have him trained for this purpose. This official will centralise all matters relating to the pollution of the sea. He will, under your authority, liaise with the other services and bodies concerned and will assist you or deputise for you at meetings where these problems are discussed.

3.2 You will likewise be required to make available such staff and equipment as you may consider necessary for the performance of this task. Your proposals for the organization of these units should be sent to me with copies to the Office of Personnel and Organization (PO/ST 2) and the Office of Maritime Ports and Waterways (Central Hydrological Service) before 31st March next.

3.3 I would remind you that credits may be released for the conduct of studies on the means of controlling pollution and on the action to be prepared in your service, either under Chapter 53-32/1, studies co-ordinated by the technical committees or, more occasionally, under Chapter 55-01, Item 12, in the case of public health studies forming part of the town planning studies on built-up areas of the coast.

p.p. The Minister
Head of the Private Office

MINISTRY OF PUBLIC WORKS AND HOUSING

Decree No. 71-119 dated 5th February, 1971 on concessions of artificial beaches on the coast and amending Decree No. 66-413 dated 17th June, 1966 implementing Law No. 63-1178 dated 28th November, 1963 on the maritime domain of the State

The Prime Minister

Acting on the report of the Minister for Finance and Economic Affairs and the Minister for Public Works and Housing

Considering the code governing the domain of the State and in particular Articles L.28, L.29, L.30, L.31, L.32, L.33, R.53, R.54, R.55 and R.150-1

Considering Law No. 63-1178 dated 28th November, 1963 on the maritime domain of the State

Considering Decree No. 66-413 dated 17th June, 1966 implementing the afore-mentioned law

Considering Decree No. 64-250 dated 14th March, 1964 as amended, on the powers of Prefects, the organization of Government services in the Départements and administrative decentralization

Considering Decree No. 70-1047 dated 13th November, 1970 on the decentralization of State decision-making in connection with public investment

Considering Decree No. 70-1222 dated 23rd December, 1970 on the classification of investments referred to in Article 1 of Decree No. 70-1047 dated 13th November, 1970.

After consulting with the Council of State (Public Works Section)

Hereby decrees as follows:

Article 1. Article 3 of the Decree of 17th June, 1966 shall be replaced by the following:

Article 3

I. The grant of concessions for the creation and use of artificial beaches on the sea shore shall not be interpreted as conferring on the concession holders title to land reclaimed from the sea.

Standard contracts for these concessions shall be drawn up by the Minister of Public Works and Housing.

Concessions for artificial beaches and the contracts governing such concessions shall be approved by the Prefect.

Any departure from the standard contracts shall be subject to the authorisation of the Minister of Public Works and Housing.

II. Applications for concessions shall be investigated by the Chief Engineer of the Maritime Service under the authority of the Prefect.

The Chief Engineer shall forward the relevant documents to the Director of Fiscal Services for determination of the financial aspects of the concession.

He shall consult with the "Conseils Généraux", the municipal councils and the public services concerned as well as with the Département's Commission for the Sea Shore provided for in Article 6 hereunder. The bodies and services consulted shall have one calendar month in which to submit their comments. In the absence of such comments within the month, it shall be assumed that there are no objections.

Where appropriate, the Chief Engineer shall set in motion the joint investigation procedure provided for in the Law of 29th November, 1952 as modified and in the implementary decrees.

III. The terms and conditions for the use of artificial beaches by the public and the rates for services to users shall be appended to the contract.

The rates and conditions of use may be amended by the concession-holder subject to the display of the proposed changes for a fortnight at the town hall of the commune in which the beach is situated and in the concession holder's offices.

Arrangements for the display of these changes shall be made by the Chief Engineer of the Maritime Service who shall, moreover, consult with the Mayor should the concession-holder not be the commune. The Mayor's comments must be submitted within a fortnight.

On expiry of this period, the Chief Engineer shall, within the ensuing week, forward the comments and his own advice to the Prefect of the Département. Should notification of objections by the Prefect not have been received within a fortnight of the date of despatch of the above-mentioned comments, the amended rates and conditions of use shall then become applicable.

No proposal will be entertained for the modification of rates and conditions of use within three months of the introduction of the previous rates and conditions of use.

N A T O U N C L A S S I F I E D

3.2.b.0

COASTAL ZONE PLANNING (UNITED STATES)

As a linear area where land and water touch and often mix, particularly under the influence of tidal action, the coastal zone has a fragile, dichotomous ecology. With the concentration of tourism and industry it attracts, environmental problems of that type of region deserve special attention. The planning of coastal zones must be more sensitive to environmental factors than that for other regions. The report on coastal zones presents an overview of programmes directed at those areas in the United States.

N A T O U N C L A S S I F I E D

3.2.b.0

N A T O U N C L A S S I F I E D

3.2.b.1

3.2.b COASTAL ZONES : ELEMENTS OF A SPECIFIC POLICY FOR
THE COASTAL ENVIRONMENT

By Mr. Harrison Loesch
Assistant Secretary, United States Department of Interior

COASTAL ZONE PLANNING

Definition of the Problem

The need for coastal zone planning becomes an inescapable worldwide problem, given the international nature of marina regions. The ecological interrelation of the oceans, estuaries, fresh waters, the land, and the atmosphere affects all mankind. Planning and management of the Coastal Zone and the adjacent lands must fully consider the impact of growing and conflicting demands on the environment. In striving for multiple usage of the Coastal Zone, mistakes have been made, but a new and greater respect is now being accorded the delicate natural factors affecting estuarine and marine environments. In recent years, the United States has taken many actions leading toward development of a national policy and a comprehensive program for the balanced management, beneficial use, and development of the Nation's estuarine and coastal areas.

The Coastal Zone, as herein considered, consists of estuaries, bays, lagoons, tidal marshes, the Great Lakes, and adjacent land areas. The resources contained in this environment provide enormous quantities of food; a means of transportation; a source of coolant; a source of power; a final disposal point for wastes; a source of fresh water (through conversion); a vast reservoir of minerals; and recreation for millions of people. The adjacent land areas compete for commercial and industrial developments, housing developments, docking facilities, parks, recreation areas, marinas and tourist attractions, and for structures such as tunnels, roads, bridges, and airports.

The United States is favored with an extensive Coastal Zone - a most valuable commercial, industrial, and recreational asset. About 75 percent of the Nation's population is in the thirty States, including the Great Lakes, which comprise the Coastal Zone. Growing concern about pollution of these limited natural resources has led to numerous studies on the subject, and to new and proposed legislation. Government at all levels, conservation organizations, and the general public have recognized rational management of the Coastal Zone as one of the Nation's more critical environmental problems.

N A T O U N C L A S S I F I E D

3.2.b.1

N A T O U N C L A S S I F I E D

3.2.b.2

Increasing urbanization, a growing population with higher incomes and leisure time for recreation, and expanding industrial development have imposed constantly increasing demands on the coastal, estuarine and Great Lakes areas. Pollution of the U.S. Coastal Zone has increased along with population and industrial growth; consequently water quality improvement must be a prime objective in Coastal Zone planning. The ocean is the ultimate depository for all the wastes emptied into inland waters. In the case of chemicals and other materials which do not degrade in sea water, the damage has a cumulative and lasting effect. Numerous outfalls exist off our coasts that are discharging sewage and industrial wastes, including toxic materials. The dumping areas can be clearly defined. Polluting discharges into shallow nearshore waters, which often lie in constricted locations, can lead to extremely high concentrations of contaminants.

Solutions to these complex problems of waste disposal in the Coastal Zone require reconciliation of diverse and often conflicting public and private demands. Qualified research is needed on pollutants, their behavior in coastal waters, and on means of monitoring water quality and water discharges. Projects may then be developed which provide the greatest longterm social and economic benefits.

A 1969 pollution incident off Santa Barbara, California, illustrates the need for a strong Coastal Zone protection policy. The leakage of oil and gas from an offshore well near Santa Barbara resulted in widespread pollution, despite use of a rapid sequence of corrective actions. President Nixon's Administration has since approved a program to insure safer oil extraction procedures in coastal and offshore waters. Research projects were also instituted to find more effective ways to remove or contain oil spills such as that off Santa Barbara or those coming from stricken tankers.

Federal Action

In 1970, the heightened concern in the United States with environmental and marine affairs led to creation of two new Federal agencies - the Environmental Protection Agency and the National Oceanic and Atmospheric Administration, and to creation of a Council on Environmental Quality, formed pursuant to passage of a National Environmental Policy Act.

The Environmental Protection Agency brought together components of several Federal agencies concerned with protecting and improving the environment; it provides a step toward a centralized attack on environmental threats, including those facing coastal and estuarine waters. The

N A T O U N C L A S S I F I E D

3.2.b.2

3.2.b.3

marine waters provision of one of the major laws under which the Environmental Protection Agency operates, the Federal Water Pollution Control Act, was amended in 1970. It now requires that (1) there be no discharge of oil into navigable waters of the United States, adjoining shorelines, or waters of the contiguous zone; (2) development of regulations to control discharge of hazardous polluting substances into these areas; and (3) promulgation of Federal standards of performance for marine sanitation devices to control discharge of sewage from vessels.

The formation of the National Oceanic and Atmospheric Administration represented a new thrust by the United States for the development and management of its coastal and estuarine zones. This agency has been giving priority attention to studies of inshore waters. The extensive activities of the National Oceanic and Atmospheric Administration include surveying, mapping and charting the Coastal Zone, fundamental ecological research, mariculture, and life histories of marine populations for fishery purposes. Fish numbers indicate the success or failure of pollution control and whether or not a balanced ecology is being maintained. Forecasting the effects of proposed physical alterations in estuarine areas upon fishery ecology is among the more important Coastal Zone services performed by the National Oceanic and Atmospheric Administration marine laboratories.

The National Environmental Policy Act requires that Federal agencies examine the environmental implications of any proposed action which would require expenditure of Federal funds or resources. This applies to Federal grants, loans, permits, licenses, and regulations. A three-man Council on Environmental Quality established under terms of the Act oversees preparation and adequacy of environmental statements in which each Federal organization must set forth the manner and extent to which it has considered the environmental implications of its proposed actions. The Act applies to actions potentially affecting coastal and estuarine areas as well as to the rest of the Nation.

A proposed National Land Use Policy Act of 1971 which the Administration caused to be introduced into the Congress has additional and perhaps even more profound coastal zone implications. New governmentals forms which it cotemplates would include the concept of protecting coastal zone and estuarine areas of critical environmental concern. These often are fragile areas of unique value.

The proposed measure is nationwide in scope and thus includes all coastal zones in the United States. Among other measures, it would provide Federal grants for management of land use programs. These would be available if State laws affecting areas of critical environmental concern

N A T O U N C L A S S I F I E D

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take into account the esthetic and ecological values of wetlands for wildlife habitat, food production sources for aquatic life, recreation, sedimentation control, and shoreland storm protection. Such Federal grants would also be conditioned on existence of State laws taking cognizance of wetlands' susceptibility to permanent destruction through draining, dredging, and filling, and the need to restrict such activities. The measure emphasizes that many threats to coastal areas originate inland where eventual impact on shoreland environments is hard to recognize.

The proposed National Land Use Policy Act of 1971 provides for departures from the traditional practice of leaving zoning to local governmental units. This approach has resulted in a piecemeal approach to Coastal Zone and other planning. It has been highly effective in dealing with many purely local land use problems. But when land use issues spill over jurisdictional boundaries or involve values of statewide concern, concentration of zoning authority in local government has often proven a hindrance. Particularly has this been true where substantial esthetic values, as opposed to economic values, are at issue. Judgements involving esthetic values frequently fail to find adequate reflection in public policy decisions unless made at a level where countervailing interests of larger regions override local economic pressures.

The urgency of providing institutional arrangements for protection of the Coastal Zones expressed in the Administration proposal is underscored by several other bills which have been introduced into the Congress with the intent of granting aid specifically to Coastal States. Proponents of these bills believe that the country cannot afford further delay in arranging to protect fragile inshore bays and estuarine coastal areas.

In recent years, The United States has been providing for greater public access to the waters of the oceans and adequate opportunity for public use and enjoyment of all types of marine-related recreation. Recreational uses of coastal waters require effective resource planning to restrict conflicting uses, particularly those responsible for pollution. As previously indicated, the United States population generates strong competition for waterfront property for residential, commercial, industrial as well as recreational uses. Any evaluation of these activities should include measures of supply and demand, the effects of multiple use on the ecosystem supporting the resource, and an appreciation of the economic and sociological aspects of such important recreational activities as swimming, boating, and sport fishing. Economic data on marine-oriented recreation are incomplete, but available information indicates that

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direct and indirect expenditures have a sizeable impact on the economy. The numbers of salt water sport fishermen and recreational boaters have been steadily increasing in the United States. Other recreational activities conducted in coastal waters such as skin and scuba diving, have also been gaining in popularity.

The establishment of National Seashores at Cape Cod in Massachusetts and on Assateague Island in Maryland and Virginia are two prime examples of the United States' effort to provide for needed public access and use of recreational waters. In 1971, legislation was proposed to establish a Gateway National Recreation Area in the New York and New Jersey harbor area. This water-oriented recreation project would be accessible to the most densely populated metropolitan area of the Nation.

Recently, the Congress authorized the establishment of a 136,000 acre Gulf Islands National Seashore in Mississippi and Florida; also authorized was the establishment of a 71,000 acre Sleeping Bear Dunes National Lakeshore in northwestern Michigan along the shore of Lake Michigan.

President Nixon, in his 1971 Message on the Environment to Congress, specifically mentioned the need to develop public recreational areas on several parcels of Federal beach property located near coastal cities. Efforts are underway to examine other Federal properties that are under-utilized. If suitable for park purposes and determined to be surplus, they can be conveyed to States and political subdivisions without cost.

Another proposal in Congress related to recreational activities would establish marine sanctuaries. This Act would preserve areas of outstanding or unique scientific, cultural, or esthetic quality. Selected coastal areas would be set aside as part of an overall marine environment plan. Several unique ~~marine~~ wilderness areas have great cultural value and constitute an important part of the Nation's heritage and could be preserved for future generations.

Because both commercial, residential, and other private uses of the Coastal Zone often limit public access to beaches, bills have been proposed in Congress to provide the public with free and unrestricted access to and use of the Nation's beaches. Subject to certain legal exceptions and public management, private owners of lands adjacent to beaches would be prohibited from interfering "with the free and unrestricted right of the public, individually and collectively, to enter, leave, cross or use in common the public beaches."

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Regional Action

Several planning efforts have been undertaken by regional commissions concerned with problems unique to coastal and Great Lakes areas. For example, the Coastal Plains Regional Commission, one of five regional economic development commissions, has listed six categories of marine resources: commercial fishing, sports fishing, recreation and tourism, minerals and chemicals, research and development, and water transportation. The Commission found that the interrelationships and conflicts of the six activities suggested a seventh category - land and water - use planning. The Coastal Plains Regional Commission has established a Center for Marine Development Services that provides technical assistance to the southeastern United States.

The New England River Basin Commission likewise has been active in coastal zone planning. The New England group is developing a program of action from the Merrimac River to Narragansett Bay. Planning considerations include resource utilization, pollution control, industrial and residential needs, recreation and conservation needs, and related factors. Recommendations for action at Federal, State, and local levels will be developed, as well as guidance for private interests. The Commission also has begun a study on alternative institutional organizations for State coastal zone authorities.

The Great Lakes - five interconnected bodies of water - are a unique Coastal Zone. The lakes are fresh, yet their vast size subjects them to oceanic forces. Although they escape some of the problems created by a saline environment, others more than replace them. Because of their regional and international aspects, the managerial problems of environmental planning and resource management are extraordinarily complex. The Great Lakes Fishery Commission and the International Joint Commission work jointly with Canadian counterparts, while the Great Lakes Basin Commission, the Upper Great Lakes Regional Commission, and the Great Lakes Compact Commission deal with regional matters within the United States.

States Action

On the State level, in July 1971, Maine's Environmental Improvement Commission moved to protect its coastline by rejecting plans to build a \$150 million oil refinery on Sears Island, about midway up the winding Maine coast. The decision represented a victory for Maine conservationists who had argued that construction of the refinery exposed some of the State's most scenic shore area to a constant danger from oil spills. The action of the Commission, of course, represented a severe blow to the State's economy.

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A similar action at the State level occurred in Delaware. Under the Delaware Coastal Zone Act of 1971, the State banned the construction of new heavy industry in its coastal area. As a result, recent programs calling for massive development of the Delaware Bay coastline, south of the existing Wilmington industrial center, including a large oil refinery and man-made islands for the storage of coal and iron, have been denied. Other States and local governments have been resisting pressures for new port and industrial developments along their coasts.

Local Action

At the local level of government, an interesting example of Coastal Zone planning has been conducted on Long Island, New York, under the auspices of the Nassau-Suffolk Regional Planning Board. In 1965, the Board launched a unique program by creating the Nassau-Suffolk Regional Oceanographic Committee. This body was commissioned to examine present and potential opportunities and problems presented by Long Island's approximately 1,000 miles of coastline. During the previous decade the increasing demand for shore property had led to the destruction by dredging and filling of nearly one-third of Long Island's valuable tidelands. The work of the Committee resulted in the establishment of a Marine Resources Council, which instituted a comprehensive research program. The first phase of the research program, problem definition, and the second phase, meeting knowledge requirements, are well under way. Long Island's coastal zone planning has gained broad recognition, particularly since its problems have much in common with those of other estuaries in the United States and abroad.

Conclusions

In summary, comprehensive planning is required for optimum use of the Coastal Zone. Establishment of a Department of Natural Resources, which the Administration has requested, would provide a single department in the Federal structure with responsibility for developing long-range Nationwide land use plans for management and development of the Coastal Zone. Because environmental impacts do not respect State lines, Coastal Zone planning must be centralized, yet it must still be responsive to local requirements. The difficulties lie, as with many other socio-economic problems, in facing up to conflicting objectives. It is clear, however, that greater emphasis will have to be placed on environmental protection in planning for future development of the Coastal Zone.

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PROBLEMS OF A DEPRESSED AREA : THE APPALACHIAN EXPERIENCE
(UNITED STATES)

Appalachia is a vast (4/5th the area of France), mountainous region in the Eastern United States. A century of mining - primarily coal - timber harvesting and heavy industry has caused serious damage to the land, the stream waters, and the air in the region. While the national economy was evolving rapidly, economic and social conditions in the region were lagging dramatically behind the rest of the country. The Appalachia Regional Commission was created in 1965 to provide for the co-ordination and intensification of economic development activities among the thirteen states having jurisdiction over the region, and the Federal Government. The report shows the deep involvement and activities of the Commission in environmental issues, although this was not one of its primary initial goals. The Commission became involved in these issues as a result of the furtherance of economic and social objectives such as promotion of tourism, encouragement of business expansion, improvement of the health of the residents and fire prevention.

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3.3. PROBLEMS OF A DEPRESSED REGION :
THE APPALACHIAN EXPERIENCE

by the Appalachian Regional Commission
March 1971

Description of the Region

Appalachia is a region apart - geographically and statistically. It is a mountain land boldly upthrust between the prosperous Eastern seaboard and the industrial Middle West - a highland region which sweeps diagonally across 13 States from western New York to northern Mississippi. Its ridges and twisted spurs and valleys measure to 165,000 square miles - an area 10 times the size of Switzerland.

Appalachia has natural advantages which might normally have been the base for a thriving industrial and commercial complex. Below its surface lie some of the nation's richest mineral deposits including the seams which have provided almost two-thirds of the nation's coal supply. The region receives an annual rainfall substantially above the national average. More than three-fifths of the land is forested. Its mountains offer some of the most beautiful landscapes in eastern America, readily lending themselves to tourism and recreation.

Yet this natural endowment has benefited too few of the 17.7 million people in Appalachia. The average Appalachian, whether he lives in a metropolis, in town, on the farm, or in a mountain cabin, has not matched his counterpart in the rest of the United States as a participant in the nation's economic growth.

In a region so large, there is a range of productive activity and social achievement between subregions which seems to belie the general statistics of the geographic whole. Where coal, limestone and salt occur together, as in western West Virginia, or where the hinterland coal comes to the service of transported ore, as in northern Alabama and western Pennsylvania, industrial cities have grown. On the highland perimeter, where the valley opens, or where rivers join, other cities have emerged to serve as brokers between the resource-rich interior and the surrounding nation.

But all of these different subregions share one unhappy distinction: rural Appalachia lags behind rural America; urban Appalachia lags behind urban America; and metropolitan Appalachia lags behind metropolitan America. A number of indices showed this (1964 Report of the President's Appalachian Regional Commission), among these:

1. Low Income - One Appalachian family in three had an annual income of less than \$3,000 compared to the national figure of one family in five.

2. High Unemployment - While 5 percent of the U.S. labor force is out of work, over 7 percent of the Appalachian labor was unemployed. (In some counties of West Virginia it may have been 30-40 percent).

3. Lack of Urbanization - While the nation was 70 percent urban in 1960, Appalachia was only 47 percent urban, with one of the highest proportion rural nonfarm population in the United States, a dispersed settlement pattern that accompany a resource-dependent economy and is difficult to reach with adequate public services.

4. Deficits in Education - In 1960, 42 out of 100 people in the United States over age 25 had completed high school. In Appalachia the figure was only 32 out of 100.

5. Deficits in Standards of Living - The 1960 census also reflected that the Appalachian bought fewer services, fewer automobiles and purchased less in the way of retail goods. Over 34 percent of the housing in Appalachia was deteriorating or dilapidated compared with 23 percent in the remainder of the United States.

6. Changing Population - Those most able to leave the Region in search of new economic opportunities were the young working-age adults. They left behind older people with obsolete skills and the very young who were still in school, it requiring higher level of public services with tax resources.

Furthermore, the economy of the Appalachian Region has historically been based on massive resource extraction efforts, primarily the mining of coal and the harvesting of timber. Irresponsible and rapacious mining practices, in particular, have resulted in despoiled lands throughout the Region. Lack of regulation resulted in an accumulation of damages. The legacy of these generations of neglect is still to be seen in the gouged out mountains and polluted streams of the Appalachian Region.

The Appalachian Regional Commission

It was apparent that traditional State or Federal programs would not be sufficiently responsive to meet the needs of, or address the problems of, the Appalachian Region. It was also evident that substantial improvement could be made upon these existing programs, by creating a State-Federal structure with certain critical attributes. Thus, the Appalachian Regional Commission was established, which:

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1. Represents a balance of power between the Governors of the States, the executive branch of the Federal government and the Congress.
2. Requires initiative for projects to come from the member States.
3. Requires flexibility on the part of Federal agencies under their national program guides.
4. Provides coordination and guidance of State programs, which did not exist previously.

Decisionmaking in the Commission fully reflects these attributes. Any program decision needs the affirmative vote of more than one-half of the States and of the Federal Cochairman. Program decisions with respect to projects or other applications for funds must originate with the State(s) and be approved by the particular State's (States') Representative(s). No State can be forced to accept any program decision. The Commission staff are not Federal employees; they are equally co-funded by the Federal and State governments, and primarily responsive to the needs of the Region rather than to the objectives or values of any particular program bureaucracy.

Specifically, the elements of the Commission's general approach to regional development were as follows:

To overcome the problem of the functional isolation and the lack of coordinated approach or a coherent strategy within the regular Federal aid efforts, the Commission was to provide a broad gauge link between the Federal agencies, the States, and the localities, with much more flexibility in the use of Federal funds than is usually the case.

To overcome the defect of too narrow an approach to economic development, the Commission was given much broader programmatic concerns than had been the case with economic development programs and included public works, health, education programs, and other human service activities.

To combat the problem of insufficient scale of single town or county efforts, the program would encourage multicounty planning and development districts.

To overcome the problem of fractionalization in program administration, an attempt would be made to work all of these program features into an administrative system. The Federal Cochairman, would coordinate efforts within the Federal government and the Governor's designates would tie together State actions.

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Finally, to meet the problem of lack of State-level policy involvement, the Commission was to be an experiment in federalism. The Governors of the Appalachian States were to be given an equal voice with the Federal government in formulating and executing program policies.

In terms of approaches to specific programs, Commission planning focuses on the following points:

1. Concentration and coordination of scale, mix, sequence, and timing of investments.
2. Use of "growth centers" as an investment strategy. (This is in direct contrast to ongoing Federal grant-in-aid programs which are each designed to fulfil a mission on its own terms, but not to coordinate with other similarly single-track programs. This led to a proliferation of Federal grants-in-aid for some program objectives, such as water and sewer treatment plants, since the terms and requirements of existing programs were not sufficient to meet the entire range of existing needs in any one area).
3. Creation of development plans. Ideally, these are a capital and service budget for State, Federal, and required local funds for the range of projects included. Such plans typically identified the needs and objectives of the locality (i.e., its plan and its strategy), and the projects required to implement that strategy.

Typical Regional Program Needs

One of the principal problems of the Region was its physical and social legacy of an expansive and uncontrolled extractive economy - primarily coal, but also oil and gas. This legacy fed on itself, creating a spiral of environmental degradation. The deleterious impacts of coal mining - water pollution and land degradation - have acted as a restraint on broadening the economic base of coal areas by discouraging the location of new enterprise, and have provided a negative atmosphere that has resulted in the creation of other environmental problems such as the accumulation of solid wastes, urban-town neglect, and air pollution. With a limited range of economic opportunities available to the residents of the area, and with the low educational and skill requirements needed for employment as a coal miner or farmer, through the mid-sixties, there was little incentive for the Region's youth to complete school and for the communities to provide funds to build and staff adequate schools. Thus, the narrow economic fabric of the area strongly constrained the social development which was occurring in the rest of the nation.

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The coal industry also left a legacy of an ageing labor force, many of whom are physically impaired by black lung (coal workers' pneumoconiosis) or other disabilities from occupational accidents. When miners find halfway through their working years (45-50 years old) that they have black lung and become unemployed due to technological changes in the industry, their ability to compete with non-disabled persons for the relatively few non-coal-related jobs in the Region is substantially decreased. Frequently, the unemployed coal miner becomes a public ward under various disability, unemployment, and public assistance programs. In turn, this type of available labor force is not attractive to industries looking for new plant locations, thus reinforcing the environmental impacts of the coal industry in discouraging a broadening of the economic base of coal areas. The culmination of this problem is perhaps suitably reflected in the existence for over a decade in several State water quality statutes of a provision exempting, from sewage treatment requirements, those communities which discharged their wastes into a stream polluted by acid mine drainage. The environmental degradation became institutionalized and even sanctioned by public laws and programs. Such laws and their effects on programs either have been changed in the last few years, or are in the process of being changed now with the impetus from the Water Quality Act of 1965 which requires States to establish water quality standards for interstate streams.

In a sense, the environmental impacts of coal mining in Appalachia have been aggravated by the peculiar characteristics of the Region since, with respect to ecological considerations, an upland area with many steep slopes is far more fragile environmentally than other geological areas. The natural processes of wind and water erosion operate more dramatically and visibly in such areas. Man-made disturbances of the thin soil, the vegetation, the watersheds further accelerate these processes and lead to complex, destructive results. Atmospheric inversions are more common over valleys bounded by parallel ridges because of the natural obstructions to air circulation. Therefore, air pollution is a common danger. Upland areas serve as the headwater regions and catchment areas for downstream regions on the foothills and plains. Thus, the effects of environmental damage in the mountains are readily passed on downstream to afflict areas hundreds of miles away.

Clearly, a proper approach to restoration and preservation of the environment, especially in regions such as Appalachia, requires an understanding of the linkages between all aspects of the environment so that disruption of

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one aspect does not cause a chain reaction of disruption through all other aspects. An example of the ecological complexity of the problem can be illustrated by the example of Wilkes-Barre, Pennsylvania.

The original site of this city of 80,000 was meadow and swamp. The water table was close to the surface. As the area began to be mined for anthracite coal, it was necessary for the coal companies to pump water out of the mines continually and dump it in the Susquehanna River. As this pumping began back before the turn of the century, the surface dried out and was developed as part of the city.

A complex set of environmental disasters ensued. Water pumped from the mines was acid. It killed much of the aquatic life in the North Branch of the Susquehanna River. Material from the mines was dumped in enormous culm piles, many of which ultimately caught fire. Their burning generated serious air pollution from sulfur dioxide. Underground seams occasionally caught fire. Fumes leaking up through the surface made occupancy of homes and buildings nearby dangerous and many were evacuated. As pillars in the mines were eroded or "robbed" and as coal seams burned out, mine subsidence led to the collapse of the surface endangering even the downtown areas of Wilkes-Barre and Scranton. Then as the anthracite industry closed down, the companies were no longer able to pump the mines and the water table rose back up to the surface flooding or threatening to flood residential sections of the city.

To solve the problems of Wilkes-Barre, obviously a systematic approach that deals with all the interlocked problems is essential, in full understanding of all the intricate environmental effects that may result from a given course of developmental action.

Specific Commission Program Implementation

To meet the most pressing needs of the States in the area of mined land restoration, the Commission program incorporated two basic and separate existing authorities - subsidence control and extinguishment of mine fires, and also created a new authority for the reclamation of surface mined lands. These three program thrusts were originally conceived as separate program areas; they have evolved, however, over the years, into three aspects of a total environmental approach to the problem of mined land restoration.

During the first two program years of the Commission, most of the mining reclamation projects approved by the Commission represented the massive type of effort concerning

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extinguishment of underground mine fires and control of surface subsidence that was needed in order to protect existing development in central business districts of important cities and towns in the anthracite and bituminous areas of Pennsylvania.

But although these different projects had the same intent and objectives, they were undertaken within the narrow framework of a project-by-project approach. Both sets of efforts were implemented within the confines of their individual items or projects and did not explicitly recognize that such projects existed within a system of related mining impacts. Thus, for instance, mine fire extinguishment, subsidence, or reclamation projects were undertaken for their direct and specific project impacts and little if any consideration was given to work which might be required within the same immediate area on associated mining problems.

Hence, when the 1967 amendments to the Appalachian Act were first discussed, within the Commission in the summer of 1966, it was proposed that the program authority be broadened to allow and require the States to view reclamation efforts within the total context of all of the mining problems which might exist in the area. Specific authority was added for the reclamation of waste piles from underground mining operations and from the processing of coal, the sealing of abandoned oil and gas wells which often penetrate abandoned underground mines and cause pollution of underground water supplies.

The reclamation projects submitted and approved by the Commission during the period 1967-1969 differ substantially, both in numbers and in types of projects, from those approved during the first two years of the program. Nearly half of these projects were surface reclamation for the purposes of creating lands suitable for development or recreational uses. These projects were in part conceived and involved in the broader context of correcting mining problems in development areas.

The last stages of the program's evolution began to be articulated with the completion of the Commission's report on Acid Mine Drainage. The Commission recommended that any action program for controlling and abating acid mine drainage from abandoned mines should be part of a more comprehensive pollution control and environmental improvement program for the lands and waters in the affected areas. The rationale for such a recommendation was that the greatest increase in water uses which could be expected from an acid abatement program could easily be negated by the presence of other land and water pollution in the same area.

Similarly, the Commission recognized that there were parallel considerations to be given in other reclamation activities. Thus, the entire network of direct environmental impacts from mining was now finally viewed within the overall environmental system of the area.

The Commission has therefore recommended that in the continuing program, all investments directed at pollution control or environmental improvement be made as part of a comprehensive environmental improvement program for the area in question. This requirement has been added to the section of the Appalachian Act concerning program development criteria.

The Commission's support for such an integrated approach is evident in several actions which are now underway. One concerns the proposed approach to be taken towards initiating a long-term program for abating acid mine drainage in the Monongahela River Basin. In addition, several States have initiated the development of environmental improvement plans for specific areas so that the range of necessary activities by both public and private parties can be identified and the States will be able to either proceed under an extended Appalachian program or better coordinate the applicable individual Federal programs.

These environmental improvement plans typically would: (1) identify the critical natural resource and environmental problems which are constraining the area's growth and well-being, (2) identify the natural resource and environmental objectives which need to be met, (3) establish priorities on both project and activity bases in order to overcome the resource and environmental problems, (4) identify these associated and ongoing activities - by both the public and private sectors - which must be concurrently or sequentially carried out in order to assure that the objectives of the natural resource and environmental projects are met and maintained, and (5) estimate costs for each project component.

These plans would then be submitted to the Commission for approval, as the environmental component of the States' investment plan previously discussed. Commission review would include obtaining comments from those Federal agencies concerned with specific aspects of the plan. At this point, the technical and financial participation of each Federal and State agency would be identified, as well as timing and sequence of investments for environmental improvement.

Comparative Advantages of the Commission Approach

In retrospect, the Commission's environmental program has been a natural outgrowth of that institution's structure, its basic attributes and the reasons for which it was created.

Not only has the initiative for the various projects come from the individual States, but their implementation over the years has resulted in a total coordinated environmental approach to mining problems in the Region.

Experience has indicated there are several advantages to the Commission's State-Federal partnership and its comprehensive program approach when compared with either State or Federal agencies with a single program approach. This is particularly true in terms of regional problem solving, and for planning investments in environmental improvement.

1. For example, a major institutional planning problem that often exists with the Corps of Engineers, a Federal agency with the largest water resources planning and construction program in the country, is a lack of credibility with local residents and groups in project areas. The question of credibility focuses on the adequacy of the proposed set of recommendations presented in the Corps document and whether they really constitute the only means of achieving the desired or estimated resource management objectives. In the past, this type of local concern was often assumed to arise from individuals negatively affected by the proposed project, i.e., through displacement. However, there are increasing numbers of instances where such concerns are clearly not voiced by individuals displaced by the proposed project, but by those who feel that there are alternative means of coping with the resource management problems, and there are values which are not adequately reflected in the present planning process.

In a similar vein those agencies which are counterpart to the Corps at the State level tend to be "captured" or overshadowed by the stronger Federal agency. It thus becomes impossible for them to participate as equals in project planning and development, so that they do not function as satisfactory advocates of the State's views or perspectives, and may not protect the State's best interests.

In contrast, these problems are eliminated entirely in the planning of Commission programs. All projects are initiated at the local level, while implementation is almost entirely a local affair, with minimal Commission involvement in the form of guidance and technical assistance. In addition, as part of a Corps of Engineers water resources survey planning effort for the Appalachian Region, the States prepared water resource plans from their own perspective, and these plans became part of the Corps' report. Recommendations and project priorities contained in the State plans will be primarily reflected in the Commission's report which is to be forwarded to the President and Congress.

2. Similarly, the attempt to coordinate and concentrate Commission investments in the Region provides a marked contrast to the scattered results and relative ineffectiveness of the national grant-in-aid program approach, such as for sewage treatment plants. Both the Commission's growth center strategy for coordinating investments, and its use of comprehensive environmental and development plans, have provided a structure for coordinated planning in the Region. Despite their absolute autonomy in such matters, the States have adhered surprisingly well to the general concept of concentrating their investments.

3. Decisions concerning public investment at the local level supposedly reflect the interests of all parties involved: public and private; local, State, and Federal. In fact, however, projects involving Federal participation frequently lack proper communication and integration between governmental units from the county or multi-county to the Federal levels. The problems that result form this unintentional but serious omission, are typified in the process by which the Federal Power Commission grants licenses for power site construction. Projects, when first proposed, are discussed with the local communities involved. But as modifications are proposed and adopted at succeeding higher levels of government - often at the behest of Federal agencies rather than of the States involved - information concerning these changes is not made available on an equal basis to the lower levels of the constituency. This is often merely a function of the proximity between Federal agencies, but nonetheless reflects a serious defect in the decisionmaking process.

Again, the Commission's structure, which ranges from the multi-county local development districts, through the States, to a regional headquarters and liaison with the Federal government, was designed specifically to provide the feedback between different governmental levels which is so essential to the planning process. Since this communication is inherently required by the institutional nature of the Commission, there is little chance that oversight at any one level of the decisionmaking process will be carried over to other levels involved in the program.

Institutional Constraints to the Commission Approach

Because the responsibility for initiating and administering Commission programs resides primarily with the States, the success of those programs depends greatly on the role assigned to the Commission representative in the State government - his status, degree of coordination with other State programs, responsibilities for central State planning, etc. This does vary from State to State, depending on the

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interest taken by the Governor in the Appalachian program, and the importance it is given in the context of statewide planning. In Pennsylvania, for example, the mined land reclamation program has been received with great enthusiasm since the early days of the program, while in most other States little or nothing has been done to repair the past damages due to mining. Thus, the efficacy of the Commission's program is not uniform throughout the Region and cannot be made so, since State administrators can alter their policy at will (however, within the limits established in one way or another by their own legislatures, etc.).

The second major constraint of the Commission's institutional structure stems from the fact that the enabling legislation requires it to make use of other Federal programs to fund or to implement certain projects. These include working with agencies responsible for other programs which are considered of marginal significance in terms of their priority to gain Commission funding and for which alternative sources of funding are readily available. Sometimes the Commission finds itself under pressure to use these other programs. Also included in this group are programs which require manpower and capabilities that exceed the capacity of the Commission's small staff. Thus, for example, the mine fire extinguishment and mined land reclamation projects are all administered for the Commission by the Bureau of Mines. To some extent, however, this results in some loss of control by the Commission of the project design and implementation. One reason for this is that the administering agencies often implement Commission projects within the same procedural framework used for their own programs. This has often substantially constrained the implementation of Commission programs, since other agencies' guidelines are not up to accommodating the more expanded and innovative Commission projects. Moreover, these agencies are often unwilling to alter their regulations - even though required to do so in order to satisfy the enabling legislation. In such instances, the Commission has successfully sought legislative amendments which make such changes mandatory.

Finally, when projects involve several Federal agencies as well as State and local government, there is frequent delay in their execution. The administrative delay in the implementation of these projects cannot easily be ascribed to any single governmental unit. Rather, it appears to be the result of a set of procedures requiring differing activities and responsibilities from different levels of government such that in any one instance it is never possible to identify a single omission to which the project delay can be attributed. What is evident instead is progress and lack of progress on a number of concurrent steps to be taken.

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Thus, no single governmental unit feels pressure to complete its project responsibilities, since there always appear to be a number of other tasks which must simultaneously be completed at other levels of government, before the project can be implemented.

Possible Application of the Commission Approach to Other Areas

With respect to national policy, the State-Federal partnership of the Appalachian Regional Commission has been extended to cover other Regions, however, with limited success. In part, this is traceable to the origins of such a program. One of the principal factors in the success of the Appalachian program is that its original approach - the identification of a common set of persistent problems in the Region and the need for a State-Federal partnership to adequately deal with these problems - was conceived first by the Appalachian governors and then presented to the Federal government through the President. This initial program unity of the Appalachian governors has provided the basis for the Commission to stick together during times of substantial differences among the states or between the States and the Federal government. The other regional programs tended initially to be viewed by the States as another Federal program rather than a true cooperative Federal-State approach to a common set of persistent problems. In many instances, sufficient attention and concern was not evoked by some governors of States approached by the Federal government to form a regional program.

With respect to national policy concerning a suitable approach to improving the environment, the Commission is serving in part as a "national laboratory" for testing the different concepts which have been discussed above. The staff of the Council on Environmental Quality (the President's advisors on environmental policy and programs) has indicated that they think that a coordinated approach within the Federal government to meeting environmental problems in an area will be possible by the end of this decade. By then, the results of the environmental planning and programming approach being initiated by the Commission will be apparent, and the national effort can so benefit.

One item which might be of concern is how one portion of a Central Government can differentially aid various regions in a country, while maintaining a reasonable balance of effort across that country, or with what success can a Central Government convince an area to undertake an effort which was not originally initiated or thought needed by that area.

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THE DEVELOPMENT OF RURAL AREAS WITH AN UNCERTAIN FUTURE : ITS
IMPACT ON THE COUNTRYSIDE (FRANCE)

Certain rural areas which are not in the immediate path of the daily or weekly ebb and flow of population which takes place around large towns and cities are particularly vulnerable when their future is uncertain. When opened up by the building of a fast trunk route (railway, motorway...), they experience a development "boom"; the relative isolation in which they have hitherto existed makes them ill-prepared for this (town dwellers' country houses, leisure activities, industrialisation, all without any proper planning), in fact, it has the opposite effect (desertion of farms, the often unsuccessful attempts of industries or crafts in search of cheap labour to establish themselves in the area.....). However, in the long run, modern communications links transform them into privileged areas for bringing city dwellers into contact with lightly-populated natural surroundings (as opposed to those close by towns). But this presupposes that the community is capable of preserving and developing these rural areas while at the same time safeguarding the landscape. New measures must therefore be devised to supplement, and sometimes to replace, individual initiatives.

3.4 THE DEVELOPMENT OF RURAL AREAS OF LOW AGRICULTURAL POTENTIAL AND THE DISFIGUREMENT OF THE COUNTRYSIDE

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I. DEFINITION AND PRESENTATION OF A RURAL ZONE WITH AN UNCERTAIN DEVELOPMENT

The fight against pollution and nuisances can be seen as a normal reaction to a perceived onslaught. However, our environment is also subject to more insidious damage which generally passes unnoticed. This is especially dangerous, since by the time the alarm is given the situation has either irrevocably deteriorated or demands extensive resources which have to be channelled away from other activities.

Examples of the above are the disfigurement and deterioration of the countryside as a direct or indirect result of the growth of towns or industrialisation and the development of agricultural practices which are applied regardless of their repercussions on basic ecological balances.

In France, there is a danger that in the very near future this phenomenon will seriously impair beauty spots and country places used for recreation. There are two reasons for this: practically all the French countryside is the outcome of centuries of agricultural and forestry development. A relatively delicate balance has replaced that of the prehistoric forests and meadowland. Land which has been cultivated requires constant supervision, and this was automatically provided so long as farming was going on.

The changes brought about by the industrialisation of a country set off a chain reaction affecting the whole framework of society - i.e. both the agricultural and industrial and, at another level, the economic and social sectors. The two-fold emphasis which has been laid on intensifying the industrialisation of the country during the Sixth Plan(1) and, at the same time, on the environment and nature conservation, makes it incumbent on the authorities and the general public to keep careful watch over the countryside. This applies especially to a first category of areas, which are both attractive and vulnerable because of their geographical location - e.g. coastal areas, valleys and mountainous districts or areas which are in high demand - e.g. those around towns. However, there is a second category

(1) Covering the years 1971/1975

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which may be adversely affected as a result of changes in the agricultural pattern (ageing of the population, land left uncultivated, abandonment of villages that are too small and lack essential utilities, etc.) without, however, being immediately taken over - albeit unofficially - for another purpose, e.g. tourism, residence or industry.

Of the second-category areas, those located at a moderate distance from large towns seem especially vulnerable in the long run: in such areas, the slow-up in agricultural activity is not too pronounced; its consequences are still ill-defined, nor do they immediately affect the landscape. A slow transition takes place and there is no sign of a direct onslaught. Yet, the marked rural characteristics of these areas and the fact that they are not too far from a town make them readily accessible as soon as they are traversed or served by a modern trunk route, such as a motorway.

These "subsidiary standby" areas for the towns call for special attention, it being relatively easier to bring their development under control in time since they are not subject to the same pressures from property developers as is the case on the immediate outskirts of a town.

However, town and country planning is invariably fraught with difficulties, for the planners have to lay down policies and gradually overcome the diverse and often opposing forces at play in any given place. This is the case, for example, in any rapidly-expanding built-up area, where the desire for swift and bold development comes into conflict with the longer-term ambition to preserve open spaces and neighbouring rural areas.

It is far more difficult to decide what should be the development policy for rural areas located at a moderate distance from towns. By definition, these areas are not cut out for any specific rôle, their social potentialities are meagre and they have no major regional or national enterprises in their vicinity.

All the countryside from 80 to 200 km round the Paris area (14 million inhabitants forecast for the year 2000) has the characteristics described above.

In the crown formed by the Paris basin, Le Perche, which is located a good 100 km west of the capital, is a "natural" area broken down into four administrative units: the departments of Orne, Sarthe, Eure-et-Loir and Loir-et-Cher.

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Basically, it is an area in a state of transition and with very little urban development: its main town is Nogent-le-Rotrou, which has 12,000 inhabitants. The traditional agricultural economy is no longer predominant; the proximity of the Paris area and ease of access, coupled with the policy of encouraging industry to develop a reasonable distance away from Paris, are conducive to the establishment of small industrial plants, most of which are controlled from Paris. Also, the genuinely attractive nature of the sites available appeals to Parisians in search of a week-end and holiday home. Le Perche which, while it has no major drawbacks, lacks the manifest charm that characterises the "picturesque" areas, is trying to decide on what lines it should develop. The uncertainty about its future is naturally leaving its mark on the landscape.

II. ELEMENTS OF CHANGE

(a) Development of the traditional agricultural economy

Le Perche is a thinly-populated area, with a density of, approximately one-third of that of France as a whole. Over two-thirds of the population live from the land and about ten medium-sized and larger towns have over 5,000 inhabitants.

Farming forms the basis of Le Perche's regional economy, and two-thirds of the land are given up to grazing, sometimes combined with cereal cultivation. The farms are very modest in size, half of them having under 20 hectares of land. Their numbers are dwindling at an ever-increasing rate, either because the farmers are leaving the land or because there is no-one to take their place.

The land thus vacated would normally be taken over by adjacent farms if this were practicable under the present system of land distribution. However, it is difficult for a farmer whose property consists of strips of land scattered over a given commune - and sometimes several communes - to marshal the necessary resources to cultivate a larger area, since the fact that he has to work with such an unwieldy arrangement of land leaves him neither the time nor the energy to expand.

In Le Perche, as elsewhere, agriculture cannot be given new impetus unless the land is reconstituted. This is the first stage in structural reorganization and, as things stand at present, it entails the transformation of a countryside based on the concept of small-scale non-mechanised pastoral farms where each meadow is enclosed by a hedge. Le Perche, with its wooded countryside, so typical of Western France, is going to have to change its image. What will it look like? How will the change take place? Will it be the

outcome of a series of elementary, stop-gap decisions or will it give rise to lasting results which reflect the will of the community as a whole? Which community? The inhabitants of Le Perche? The town-dwellers, and especially the Parisians, who come there in search of peace? The newly-arrived industrialists who are induced to settle in the area by a decentralisation bonus or the prospect of an undemanding and under-organized labour force?

At all events, reconstitution entails the redistribution of land, a new network of country roads and frequently a new pattern of farm buildings. In wooded country, it invariably results in the cutting-down of hedges, which are regarded as the normal obstacles to mechanisation, itself a consequence of man's abandonment of the land. Also, hedges sometimes take up a great deal of space, so that there is a widespread tendency to do away with them in order to achieve maximum production.

It would not be appropriate in this paper to go into the ecological consequences - which are now well-known - of the destruction of the field and hedge ecosystem, which is based on evapotranspiration phenomena at the physiological level of plant productivity and on the intricate balance which, in particular, permits the existence of birds that feed on crop parasites. The effects of land reconstitution on the environment are important since the balance is radically altered. Frequently, the new balance can be maintained only by constant effort on the part of man, who is caught up in a cycle of harmful activity: e.g. the growing use of pesticides to offset the disappearance of natural parasite destroyers.

Land reconstitution means larger farms and makes it easier to buy up strips that were previously too far away. Development companies help to facilitate transactions and promote improvements. Inevitably, there comes a stage when the old farm buildings are no longer adequate: a larger amount of grain or fodder has to be stored, dairy livestock is reared indoors, etc. At this stage, light, multi-purpose and sometimes collective buildings are constructed. These are more conspicuous and generally large: it is easier to build upwards with steel or sheet-iron than with stone and cheaper to build roofs with conglomerate strips than with slates or tiles. The colours used differ from those of local materials and the contractor is perhaps from a neighbouring area if not from the other end of France.

Thus, quite fortuitously, there develops a situation in which the practical use made of the soil and the buildings in a given area cancels out the diverse attractions this area has previously held for those who inhabited or travelled across it.

This agricultural transformation, which is inevitable, as in any country or area undergoing economic development in the industrial and tertiary sectors, is accelerated by uncertainty about the future of farming; this is most acute in areas untouched by progress. A real difficulty, insofar as Le Perche is concerned, is to arrive at clearly-defined economic objectives. However, there is just as serious a problem to resolve for every small farm: how to effect the transition from a subsistence economy to a market economy entailing more extensive stock - with the accompanying financial problems and, in the case of tenant farmers, the problem of insecure tenure.

(b) The construction of a major communications link

In these circumstances, it is particularly important to take account of the fact that an area of this kind is especially vulnerable when it has been remote from major towns for a lengthy period. Le Perche is ill-prepared for the onslaught of a motorway that will put it within approximately an hour's reach of Paris. The Parisians' weekend dwellings have already saturated Normandy, the Val de Loire and Sologne. The discovery of a countryside still relatively untouched by city dwellers, low real estate costs, the beauty of certain valleys and the proximity of woods are enticing enough to attract a rush of buyers. In the long run, this will impair the beauty of the countryside and accelerate its abandonment by "nature's custodians" (who are only too pleased to get a high price for a few hectares and some picturesque old buildings of little real use) and the construction of new buildings, which will mushroom up everywhere without rhyme or reason.

This is borne out by developments in l'Yonne, to the South-East of Paris, which was in the same position as regards agriculture and distance from the capital following the opening of the "Autoroute du Sud". The siting of motorway exit points has significant and wide-ranging repercussions on the landscape and the regional economy. Weekend dwellings have little economic impact and their contribution to the life of the community is limited; also, improved communications have enabled the rural population to go much further afield than hitherto to satisfy their requirements. The usual pyramid, with the big town at the apex and the hamlet at the base, has flattened out.

The car and the refrigerator, and even more often the deep-freeze, make it possible to buy from major operators and fall back on the village shop only occasionally or in an unexpected emergency. The small shopkeepers find it increasingly difficult to make a living; as they dwindle, so also do the craftsmen and there is an increasing tendency to leave for the towns. The countryside draws its vitality from the towns, just as the towns derive strength from the rural setting surrounding them, provided it remains unspoilt.

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The motorway is the symbolic factor which, for a time, puts a stop to the aimless development of an area without any specific vocation.

It alters distance and time factors and calls for a radical reappraisal on the part of those whose responsibility it is to exercise constant control over changes in the environment and in present and future communities.

On what basis can we get away from the increasingly outworn idea that everything centres around agricultural production?

III. THE NOTION OF COUNTRYSIDE

Up to now, the layout of the countryside has generally been geared to the needs of agricultural production, which for centuries has provided the essential basis for industrial and community life.

With the growth of towns and industry, it has become increasingly clear that space can be even more valuable for its environmental potential than as a source of corn or beetroot. Is the present trend aimed at the creation of an environment without any agricultural activity in the true sense of the word?

What rules should be applied in creating and developing this new kind of open space?

Clearly, a solution must be found to these questions if large tracts of land which are no longer of any agricultural value are not to return to their former state of neglect, i.e. run to waste. A case in point is the Eastern part of the Parisian basin with its waste land and woods which are valueless from the forestry standpoint. Handicapped sectors of the agricultural structure are soon overcome: whereas flat tableland lends itself to the creation of extensive units meeting the requirements of modern farming techniques, especially for cereal cultivation, hidden away in the hills is a closely-knit network of pastureland from which a number of small farms derive a meagre existence. The undeniable charm of these valleys, the small units into which the land is divided and the fatigue they cause the farmer are all conducive to the building of weekend dwellings by those who thirst after peace and quiet and natural beauty.

True, these are to be found by the first arrivals, but they soon die out when building starts on the opposite slope or a road is widened and building can be intensified.

Agriculture has no place in the life of the city dwellers, who arrive to partake of the gifts of nature, much as they might take medicine in order to offset the inhuman conditions of life that prevail in the big cities. At this stage, there begins a period of conflicting interests, as the city dwellers look upon the working of gravel-pits, the setting-up of an industry and even straightforward land reconstitution as a sacrilege. This confused state of affairs has perforce an adverse effect on the landscape, and very frequently its charm deteriorates. The time has come to consider the creation of landscape as an end in itself which, in our day and age, meets a need of creating beauty and harmony - few people however are conscious of this need since most of us are convinced that quality does not have a real value of its own because it necessitates a value judgment and is therefore arbitrary.

A landscape is invariably affected by the occupational activities of those living in the area. Consequently, there is no question of restoring it to its previous state. On what basis should the landscape problem be approached?

Basically, we should be guided by an intimate combination of ecological and aesthetic awareness in approaching all questions affecting the countryside.

It is important to stress the interdependence - a fact that has only recently been appreciated - of the sciences of nature and the art of significant forms (shapes, colour, pattern, light, etc.). The weakness of these two branches when taken in isolation is illustrated by the inability of ecologists alone to formulate teleological definitions and of writers on aesthetics to provide unaided an objective justification for their "reasons". As regards aesthetics, and in order to avoid using this term, it would be better to talk of "sensory propositions"(1) whose quality and consistent multiplicity stimulate each individual's sensitivity according to his own temperament and enable him to perceive an ever-changing harmony between living things and objects. Thus, we should refer to visual complexity rather than to beauty, the sensory impact experienced at different levels as we approach a given scene varying in intensity according to the range of impressions accessible to us.

An analysis of this kind eludes the weakness inherent in an aesthetic appraisal, which is unlikely to serve any useful purpose and is frequently dogmatic; also, it leaves plenty of room for adjustments as requirements change since it is liberal enough to provide a basis for any future applications. It is on these lines that effort should be made to carry out an operational study on the future of the countryside.

(1) Refers to the work of B. Lassus

This, too, will have an impact on the pattern of the community. Not only will it be necessary to have ecological/environmental experts but arrangements will have to be worked out for financial compensation in dealings between the rural population and city dwellers; in other words, new provisions will have to be invented for "space marketing". From a community standpoint, the normal procedure for acquiring real estate would very quickly break down, if only because of the limited amount of space available. Collective arrangements will have to be worked out, and their quality will provide a measure of the society that has introduced them. They will tend to create a value that one might wish to call the collective ownership right on landscape that would remain totally independent from any specific real estate ownership system.

The difficulties with which farmers and the rural community are meeting in every country have an economic and social significance of concern not only to farmers but also to the public at large, including city dwellers.

The transformation of the countryside is characterised by a change in our attitude to space. In the past, this was based on a concept of agricultural and forestry production, reflected in a whole system of fields, meadows and woods, a pattern of roads, by-ways, canals and hedges, and a network of farms, hamlets and villages.

However, the growth of towns, coupled with a frequently ill-organised influx of new inhabitants, has put a premium on low-density areas, which have come to assume increasingly specific psychological importance in the eyes of city dwellers.

If a strictly economic reasoning were adopted, based exclusively on available trade figures, increased output in certain areas as a result of greater productivity and the valorisation of methods would result in the other areas being abandoned.

Rural areas have a qualitative as well as quantitative value and when we come to assess it, it should be considered as part of the "national heritage".

Difficult as this concept may be, some way should be found to designate the qualitative value of sites and the scenery. Little research has been conducted on this problem in France.

So far, rural development has been based on what is considered to be the only realistic approach, i.e. exclusively on economic expansion with an eye to the current market. Consideration has thus been given to complementing agricultural development with the provision of tourist, sport and cultural amenities. The next step is to work out some way of controlling the development of the countryside so as to ensure

that these facilities, which are intended for use by city dwellers do, in fact, fulfil their purpose: i.e. the provision of lightly-populated areas whose advantages are neither eroded nor spoiled by the withdrawal of the rural community and the massive arrival of city dwellers.

Around large towns, those sectors which have retained over-pronounced rural characteristics for a long period represent a formidable problem in terms of the quality of the environment and its natural life. These under-developed areas are particularly vulnerable. Although they have escaped the mainstream of progress, which has, so far, taken the form of industrial and urban expansion, they are located close to heavily-populated areas while their agricultural activity, on which the life of the local community is centred, is gradually declining.

The region only needs to be opened up by a motorway for the difference in population density and, especially in real estate prices to prove such an attraction that there will be every danger of an over-hasty transformation, with all the consequences this entails. Usually, this has fatal repercussions on the environment. It appears that one of the key requirements for a successful environmental policy is that proper control should be exercised over the rate of socio-economic development.

It may therefore be concluded that:

1. Landscape planning should have its place in town and country planning and development projects.

2. In considering the development of an area for recreation purposes, it is essential to look beyond the provision of the necessary amenities (swimming pools, hotels, etc.) and consider what measures can be taken to safeguard the quality of the countryside despite the changes that will inevitably occur.

3. Any scheme for the collective acquisition of land in country areas should be planned in close co-operation with the farming community.

4. Before opening up an area with a major communications link, a study should be conducted on environmental development.